

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 U 1  
Edition : 01.12.89  
Replaces : 02.10.89  
Test oil : ISO-4113

Combination no. : 0 403 446 228

Injection pump  
Pump designation : PES6MW100/320RS1182  
EP type number : 0 413 406 167  
Governor  
Governor design. : RQV350...1300MW46-20  
Governor no. : 0 420 083 192

Cust. part no. : 1815267C91

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

AD1

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

---

Rack travel in mm : 11.90...12.00

---

Del.quantity cm<sup>3</sup>/ : 11.9...12.1

---

100 s: (11.7...12.3)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 350.0  
Rack travel in mm : 6.4...6.6  
Del.quantity cm<sup>3</sup>/ : 1.8...2.2  
100 s: (1.5...2.4)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460  
travel mm : 9.10...9.50  
2nd speed rpm : 1350  
travel mm : 8.30...8.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 800  
Del.quantity : 119.0...121.0  
1000 : (117.0...123.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1360...1380  
2nd rack travel in: 4.00  
Speed rpm : 1480...1490  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 165  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 360  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1300

Del.quantity cm<sup>3</sup>/ : 120.0...123.0  
1000 s: (117.5...125.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 99.5...101.5  
1000 s: (97.5...103.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1360...1380

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: IHC # 1815267C91  
Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.  
Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 U 2  
Edition : 12.01.90  
Replaces : 02.10.89  
Test oil : ISO-4113

Combination no. : 0 403 446 229

Injection pump  
Pump designation : PES6MW100/320RS1182  
EP type number : 0 413 406 167  
Governor  
Governor design. : RQV350...1200MW64-1  
Governor no. : 0 420 083 193

Cust. part no. : 1815224C91

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 164.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A03

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 11.90...12.00  
Del.quantity cm<sup>3</sup>/ : 11.9...12.1  
100 s : (11.7...12.3)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.2...6.4  
Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
100 s : (1.1...2.0)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 8.30...8.50  
2nd speed rpm : 1460  
travel mm : 9.10...9.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 800  
Del.quantity : 119.5...121.5  
1000 : (117.5...123.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 43...51

Testing:

1st rack travel in: 10.90  
Speed rpm : 1255...1275  
2nd rack travel in: 4.00  
Speed rpm : 1375...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 360...450

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 800  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 1000  
Rack travel in m: 11.90...12.00  
4th speed rpm : 900  
Rack travel in m: 12.20...12.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 230  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 400  
Rack travel in m: 11.70...12.00  
3rd pressure hPa : 800  
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 126.0...130.0  
1000 s: (124.0...132.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 99.0...101.0  
1000 s: (97.0...103.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1255...1275

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.40  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: IHC # 1815224C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter. Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 V  
Edition : 01.12.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 446 230

Injection pump  
Pump designation : PES6MW100/320RS1185  
EP type number : 0 413 406 170  
Governor  
Governor design. : RQV350...1200MW64-2  
Governor no. : 0 420 083 194

Cust. part no. : 1815225C91

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A05

Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85  
: (3.70...3.90)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 8.30...8.50  
2nd speed rpm : 1460  
travel mm : 9.10...9.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 800  
Del.quantity : 142.5...144.5  
1000 : (140.5...146.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1265...1285  
2nd rack travel in: 4.00  
Speed rpm : 1415...1425  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 360...450

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 800  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 1150  
Rack travel in m: 14.10...14.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 450  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 800  
Rack travel in m: 14.40...14.60

START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 151.0...155.0  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 98.0...100.0  
1000 s: (96.0...102.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1265...1285

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: IHC # 1815225C91

Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.  
Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 81  
Edition : 02.01.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 446 231

Injection pump  
Pump designation : PES6MW100/720RS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1400MW48-8  
Governor no. : 0 420 083 175

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

A07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.80...12.10  
4th speed rpm : 1200  
Rack travel in m: 11.00...11.30

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

A08

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 55  
 Edition : 02.10.89  
 Replaces : 15.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 231  
 Injection pump  
 Pump designation : PES6MW100/720RS1144-  
 1  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1400MW48-8  
 Governor no. : 0 420 083 175

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.8...8.3  
 Del.quantity cm3/ : 0.9...1.3  
 100 s: (0.6...1.5)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
 travel mm : 9.20...9.60  
 2nd speed rpm : 1450  
 travel mm : 8.30...8.50  
 3rd speed rpm : 550  
 travel mm : 2.80...3.40  
 4th speed rpm : 300  
 travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1450  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 75.0...77.0  
 1000 : (73.0...79.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL  
Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.80...12.10  
4th speed rpm : 1200  
Rack travel in m: 11.00...11.30

#### START CUT-OUT

Speed 1/min : 200 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 80  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 232  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1400MW48-11  
 Governor no. : 0 420 083 190

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kw : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s : (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 69  
 Edition : 02.10.89  
 Replaces : 15.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 232  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144-  
 1  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1400MW48-11  
 Governor no. : 0 420 083 190

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
 travel mm : 9.20...9.60

2nd speed rpm : 1450  
 travel mm : 8.30...8.50

3rd speed rpm : 550  
 travel mm : 2.80...3.40

4th speed rpm : 300  
 travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 4  
Edition : 02.01.90  
Replaces : 18.08.89  
Test oil : ISO-4113

Combination no. : 0 403 446 233

Injection pump  
Pump designation : PES6MW100/320RS1171  
EP type number : 0 413 406 156  
Governor  
Governor design. : RQV300...1400MW97-1  
Governor no. : 0 420 083 195

Customer-spec. information  
Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 8.50  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1565...1595  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 3.9

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm3/ : 66.5...69.5  
1000 s: (64.0...72.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.50  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 T 1  
Edition : 09.11.89  
Replaces : 18.08.89  
Test oil : ISO-4113

Combination no. : 0 403 446 234

Injection pump  
Pump designation : PES6MW100/320RS1176  
EP type number : 0 413 406 158  
Governor  
Governor design. : RQV275...1250MW80-4  
Governor no. : 0 420 083 196

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226H

1st version kW : 143.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.60...6.80

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.90...9.30

2nd speed rpm : 1325

travel mm : 8.00...8.20

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1320

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 750

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 10.40  
Speed rpm : 1335...1345  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 4.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 275  
Rack travel in mm : 6.60...6.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 150  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 300  
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 94.5...97.5  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 51.0...53.0  
1000 s: (49.0...55.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1335...1345

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...102.0  
1000 s: (85.0...105.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 3  
Edition : 02.01.90  
Replaces : 18.08.89  
Test oil : ISO-4113

Combination no. : 0 403 446 235

Injection pump  
Pump designation : PES6MW100/32ORS1171  
EP type number : 0 413 406 156  
Governor  
Governor design. : RQV300...1300MW80-5  
Governor no. : 0 420 083 197

Customer-spec. information  
Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.80...8.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 200  
Rack travel in m: 10.20...10.50  
3rd pressure hPa : 700  
Rack travel in m: 10.80...10.90

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 81.0...84.0  
1000 s: (78.5...86.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 43.0...45.0  
1000 s: (41.0...47.0)

#### BREAKAWAY

A20

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with  
prestroke 3.00...3.10 mm at barrel 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6,0 W  
Edition : 13.12.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 236  
Injection pump  
Pump designation : PES6MW100/32ORS1119-  
3  
EP type number : 0 413 406 173  
Governor  
Governor design. : RQV300...1400MW57-2  
Governor no. : 0 420 083 198

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD 61-FBQ

1st version kW : 149.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 11.4...11.6  
100 s: (11.2...11.8)

Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.4  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1600  
travel mm : 9.50...9.90  
2nd speed rpm : 1450  
travel mm : 8.40...8.60  
3rd speed rpm : 550  
travel mm : 3.20...3.80  
4th speed rpm : 300  
travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1480  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 114.0...116.0  
1000 : (112.0...118.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1610...1640  
4th rack travel in: 1725  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 540...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 665  
Rack travel mm : 12.10...12.20

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 400  
Rack travel in m: 10.30...10.50  
3rd pressure hPa : 1000  
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6,0 Z  
 Edition : 13.12.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 237  
 Injection pump  
 Pump designation : PES6MW100/320RS1119-4  
 EP type number : 0 413 406 174  
 Governor  
 Governor design. : RQV300...1400MW57-3  
 Governor no. : 0 420 083 199

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD 61-FHQ / GC

1st version kW : 127.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1600

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.40...8.60

3rd speed rpm : 550

travel mm : 3.20...3.80

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 600

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
4th rack travel in: 1725  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 540...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 470  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 330  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : AIF 5,9 A  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 238  
 Injection pump  
 Pump designation : PES6MW100/720RS1188  
 EP type number : 0 413 406 175  
 Governor  
 Governor design. : RQV300...1350MW106  
 Governor no. : 0 420 083 200

Customer-spec. information  
 Customer : AIFO

Engine : 8061.25.051

1st version kW : 210.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 11.50...14.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1530

travel mm : 9.00...9.20

2nd speed rpm : 1400

travel mm : 7.80...8.20

3rd speed rpm : 600

travel mm : 2.90...3.50

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Del.quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.90  
Speed rpm : 1390...1400  
2nd rack travel in: 4.00  
Speed rpm : 1515...1545  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 1000  
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 149.0...152.0  
1000 s: (146.5...154.5)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...120.0  
1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 Q  
Edition : 24.11.89  
Replaces : 23.06.89  
Test oil : ISO-4113

Combination no. : 0 403 456 105

Injection pump  
Pump designation : PES6MW100/321RS1186  
EP type number : 0 413 406 168  
Governor  
Governor design. : RQ250/1200MW84-2  
Governor no. : 0 420 082 040

Customer-spec. information  
Customer : MAN

Engine : D 0826 LUH

1st version kw : 157.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.70...14.80

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 9.50...9.90

2nd speed rpm : 1250

travel mm : 7.50...7.70

3rd speed rpm : 350

travel mm : 5.20...5.80

4th speed rpm : 250

travel mm : 2.30...2.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

Setting point:  
Speed rpm : 600  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1245...1260  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

## TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 600  
Rack travel in m: 14.80...14.90  
3rd speed rpm : 800  
Rack travel in m: 14.80...14.90  
4th speed rpm : 1200  
Rack travel in m: 14.30...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 400  
Rack travel in m: 13.80...14.10

3rd pressure hPa : 1000  
Rack travel in m: 14.80...14.90

## START CUT-OUT

Speed 1/min : 180 (200)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Aneroid pressure h: 1000  
Speed rpm : 1200  
Del.quantity cm3/ : 123.0...126.0  
1000 s: (120.5...128.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 74.0...76.0  
1000 s: (72.0...78.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1245...1260

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 R  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 456 106  
Injection pump  
Pump designation : PES6MW100/321RS1190  
EP type number : 0 413 406 176  
Governor  
Governor design. : RQ250/1300MW84  
Governor no. : 0 420 082 029

Cust. part no. : 3-7020

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF

1st version kW : 165.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 15.00...0.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.90...15.00

Del.quantity cm<sup>3</sup>/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1440

travel mm : 8.70...9.10

2nd speed rpm : 1360

travel mm : 6.30...6.50

3rd speed rpm : 380

travel mm : 4.10...4.70

4th speed rpm : 250

travel mm : 1.50...1.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 33...41

#### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 13.90  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 180  
Rack travel mm : 12.60...12.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 385  
Rack travel in m: 13.70...14.00  
3rd pressure hPa : 1000  
Rack travel in m: 14.90...15.00

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 132.5...135.5  
1000 s: (130.0...138.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 134.0...137.0  
1000 s: (131.5...139.5)

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 135.5...138.5  
1000 s: (133.0...141.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1345...1360

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: MAN # 3-7020  
Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 L  
Edition : 02.01.90  
Replaces : 27.10.88  
Test oil : ISO-4113  
Combination no. : 0 403 456 107  
Injection pump  
Pump designation : PES6MW100/321RS1153  
EP type number : 0 413 406 145  
Governor  
Governor design. : RQV250...1300MW83  
Governor no. : 0 420 083 139

Cust. part no. : 3-7021

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF

1st version kW : 165.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.40...8.60

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 250

travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.50  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1445...1475  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 330...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 180  
Rack travel mm : 9.40...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 385  
Rack travel in m: 10.80...11.10  
3rd pressure hPa : 1000  
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 170 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 130.0...133.0  
1000 s: (127.5...135.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 132.0...135.0  
1000 s: (129.5...137.5)

Aneroid pressure h: 1000  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 132.5...135.5  
1000 s: (130.0...138.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C11  
Edition : 05.01.90  
Replaces : 07.02.89  
Test oil : ISO-4113

Combination no. : 0 403 466 110

Injection pump  
Pump designation : PES6MW100/120RS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV500...1250MW2A319

Governor no. : 0 420 085 102

Cust. part no. : 3915688

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 171.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0  
Rack travel in mm : 6.5...6.7  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)

Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 134.0...136.0  
1000 : (132.0...138.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C # 3915688  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C10  
Edition : 01.12.89  
Replaces : 22.12.88  
Test oil : ISO-4113

Combination no. : 0 403 466 112

Injection pump  
Pump designation : PES6MW100/120RS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV425...1100MW2A319  
-8

Governer no. : 0 420 085 104

Cust. part no. : 3915970

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA-8.3 L

1st version kW : 188.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 7.7...7.9  
Del.quantity cm3/ : 1.9...2.3  
100 s: (1.6...2.5)

Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
Del.quantity : 142.0...144.0  
1000 : (140.0...146.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 7.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 490...550

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 750  
Rack travel in m: 14.70...14.80  
3rd speed rpm : 900  
Rack travel in m: 14.30...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (146.0...154.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 7.70...7.90  
Del.quantity cm3/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C # 3915970

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 H 2  
Edition : 13.10.89  
Replaces : 07.02.89  
Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump  
Pump designation : PES6MW100/120RS1137-  
1

EP type number : 0 413 406 157

Governor

Governor design. : RSV450...1100MW2A319-  
13

Governor no. : 0 420 085 114

Cust. part no. : 3195686

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 410 270 183

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

B10

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 150.5...152.5

1000 : (148.5...154.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

#### Testing:

1st rack travel in: 11.50  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1370  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 7.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 6.90...7.10

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 1100  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 950  
Rack travel in m: 13.20...13.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 130.5...133.5  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 6.90...7.10  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C # 3195686

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C 8  
Edition : 01.12.89  
Replaces : 07.02.89  
Test oil : ISO-4113

Combination no. : 0 403 466 115

Injection pump  
Pump designation : PES6MW100/120RS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV400...1050MW2A319  
-11

Governor no. : 0 420 085 107

Cust. part no. : 3915972

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 165.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
(3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750  
Rack travel in mm : 14.20...14.30  
Del.quantity cm3/ : 15.1...15.3  
100 s: (14.9...15.5)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 7.3...7.5  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del.quantity : 151.0...153.0  
1000 : (149.0...155.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1320  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 490...560

TORQUE CONTROL

Dimension a mm : 2.10  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 1050  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 950  
Rack travel in m: 13.00...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 123.5...126.5  
1000 s: (121.0...129.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C # 3915972

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 I  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 466 117  
Injection pump  
Pump designation : PES6MW100/120RS1178  
EP type number : 0 413 406 160  
Governor  
Governor design. : RSV425...1250MW2A332  
Governor no. : 0 420 085 110

Cust. part no. : 3913734

Customer spec. information  
Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 204.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55  
(3.40...3.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 14.10...14.20  
Del. quantity cm3/ : 15.5...15.7  
100 s: (15.3...15.9)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.4...5.6  
Del. quantity cm3/ : 1.1...1.5  
100 s: (0.8...1.7)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 900  
Del. quantity : 155.5...157.5  
1000 : (153.5...159.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.10  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
3rd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1650  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 525...585

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel mm : 10.80...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : 325  
Rack travel in m: 11.50...11.60  
2nd pressure hPa : 505  
Rack travel in m: 13.00...13.30  
3rd pressure hPa : 900  
Rack travel in m: 14.10...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.5...94.5  
1000 s: (90.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3913734

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Starting/full-load transition speed from holding magnet = 500 1/min.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 E 3  
Edition : 05.01.90  
Replaces : 23.06.89  
Test oil : ISO-4113

Combination no. : 0 403 466 119

Injection pump  
Pump designation : PES6MW100/120RS1148  
EP type number : 0 413 406 143  
Governor  
Governor design. : RSV400...750MW7A319-14  
Governor no. : 0 420 085 120

Cust. part no. : 3914872

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 180.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
(3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.7...18.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 179.5...181.5

1000 : (177.5...183.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00  
Speed rpm : 790...800  
2nd rack travel in: 4.00  
Speed rpm : 815...845  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 790...800

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. #3914872

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 H 3  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 466 120

Injection pump  
Pump designation : PES6MW100/120RS1137-  
1  
EP type number : 0 413 406 157  
Governor  
Governor design. : RSV450...1100MW2A335  
Governor no. : 0 420 085 121

Cust. part no. : 3915993

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 172.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 413 417 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
(3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 12.70...12.80  
Del.quantity cm3/ : 13.6...13.8  
100 s: (13.4...14.0)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 6.4...6.6  
Del.quantity cm3/ : 1.3...1.7  
100 s: (1.0...1.9)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 136.5...138.5  
1000 : (134.5...140.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 37...45

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1250  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 520...580

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 4.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 750  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 850  
Rack travel in m: 14.10...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : 365  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 565

Rack travel in m: 13.30...13.60  
3rd pressure hPa : 900  
Rack travel in m: 14.10...14.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 154.0...158.0  
1000 s: (152.0...160.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 98.0...100.0  
1000 s: (96.0...102.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C # 3915993  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 N  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 466 121  
Injection pump  
Pump designation : PES6MW100/120RS1184  
EP type number : 0 413 406 171  
Governor  
Governor design. : RSV375...1250MW2A334  
Governor no. : 0 420 085 122

Cust. part no. : 3280646

Customer-spec. information  
Customer : CUMMINS

Engine : 6 BTAA 5.9

1st version kW : 157.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 10.80...10.90  
Del. quantity cm<sup>3</sup>/ : 12.5...12.7  
100 s: (12.3...12.9)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 375.0  
Rack travel in mm : 6.5...7.0  
Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 800  
Del. quantity : 125.0...127.0  
1000 : (123.0...129.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Setting point:  
Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1470  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.7

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.50...6.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : 490  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 550  
Rack travel in m: 10.40...10.70  
3rd pressure hPa : 800  
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (78.0...84.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375  
Rack travel in mm : 6.50...7.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3280646

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C12  
 Edition : 06.10.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 466 122

Injection pump  
 Pump designation : PES6MW100/120RS1137  
 EP type number : 0 413 406 131  
 Governor  
 Governor design. : RSV400...1250MW2A319  
 -15  
 Governor no. : 0 420 085 123

Cust. part no. : 3917598

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CTA

1st version kW : 204.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 13.40...13.50

---

Del.quantity cm<sup>3</sup>/ : 15.2...15.4

---

100 s: (15.0...15.6)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 400.0  
 Rack travel in mm : 7.1...7.3  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.4  
 100 s: (1.8...2.7)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 152.0...154.0  
 1000 : (150.0...156.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 47...55

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.40  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1500  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 500...560

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 146.5...149.5  
1000 s: (144.0...152.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

B23

Rack travel in mm : 7.10...7.30  
Del.quantity cm3/ : 20.5...24.5  
1000 s: (18.0...27.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C # 3917598

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 Q  
 Edition : 05.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 466 123  
 Injection pump  
 Pump designation : PES6MW100/120RS1137-  
 2  
 EP type number : 0 413 406 180  
 Governor  
 Governor design. : RSV500...1250MW2A319  
 -16  
 Governor no. : 0 420 085 130  
 Cust. part no. : 3918357  
 Customer-spec. information  
 Customer : CUMMINS  
 Engine : 6 CTA-8.3 L  
 1st version kW : 171.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 12.80...12.90  
 Del.quantity cm3/ : 13.4...13.6  
 100 s: (13.2...13.8)  
 Spread cm3 : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 500.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 134.0...136.0  
 1000 : (132.0...138.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.00...6.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.50...6.70

Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 4,5 M  
Edition : 02.01.90  
Replaces : 07.04.89  
Test oil : ISO-4113

Combination no. : 0 403 474 007

Injection pump  
Pump designation : PES4MW100/320RS1175  
EP type number : 0 413 404 105  
Governor  
Governor design. : RSV300...1000MW1A315  
-1  
Governor no. : 0 420 085 099

Customer-spec. information  
Customer : VOLVO-BM

Engine : TD45

1st version kw : 84.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.40

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1200  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 7.60...7.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1000  
Del.quantity cm3/ : 106.5...109.5  
1000 s: (104.0...112.0)  
Spread cm3 : 5.50  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.20...8.40  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 H  
 Edition : 02.01.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 009  
 Injection pump  
 Pump designation : PES4MW100/720RS1187  
 EP type number : 0 413 404 108  
 Governor  
 Governor design. : RSV300...1250MW5A337  
 Governor no. : 0 420 085 128

Customer-spec. information  
 Customer : KHD

Engine : BF 4L 913C

1st version kw : 92.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.0...8.2  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s: (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1000  
 Del.quantity : 118.0...120.0  
 1000 : (116.0...122.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 52...60

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

### Testing:

1st rack travel in: 12.70  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1365...1395  
4th rack travel in: 1500  
Speed rpm : 0.30...1.70

### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 800  
Rack travel in m: 14.00...14.10  
3rd speed rpm : 900  
Rack travel in m: 13.90...14.00  
4th speed rpm : 1000  
Rack travel in m: 13.70...13.90

### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.70...11.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : 320  
Rack travel in m: 12.40...12.50  
2nd pressure hPa : 470  
Rack travel in m: 13.10...13.40  
3rd pressure hPa : 1000  
Rack travel in m: 14.00...14.10

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 113.5...116.5  
1000 s: (111.0...119.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (64.0...70.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1290...1300

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 E  
 Edition : 13.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 073  
 Injection pump  
 Pump designation : PES6MW80/320RS1104-1  
 EP type number : 0 413 486 004  
 Governor  
 Governor design. : RSV300...1450MWOA801  
 -1  
 Governor no. : 0 420 085 067

Customer-spec. information  
 Customer : RVI

Engine : 797 NFA

1st version kw : 89.0  
 Rated speed : 2900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 028

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.75...1.85  
 : (1.70...1.90)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 5.3...5.5

100 s: (5.1...5.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 5.10...5.80

Del.quantity cm<sup>3</sup>/ : 1.2...1.5

100 s: (1.1...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 53.0...55.0

1000 : (51.0...57.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 7.90

Speed rpm : 1525...1535

2nd rack travel in: 4.00

Speed rpm : 1610...1640

4th rack travel in: 1700  
Speed rpm : 0.00...1.00

Remarks:

#### LOW IDLE 1

Control lever

position degrees: 29...37

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 4.7

Speed rpm : 300

Rack travel in mm : 5.10...5.80

Speed rpm : 250

Maximum rack trave: 7.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 10.20...10.30

2nd speed rpm : 1450

Rack travel in m: 8.80...9.00

3rd speed rpm : 1050

Rack travel in m: 9.80...10.00

4th speed rpm : 1170

Rack travel in m: 9.30...9.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1450

Del.quantity cm3/ : 53.0...55.0

1000 s: (51.0...57.0)

Spread cm3 : 3.50

1000 s: (4.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.90

Speed rpm : 1525...1535

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 75.0...85.0

1000 s: (72.0...88.0)

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.10...5.80

Del.quantity cm3/ : 12.5...15.5

1000 s: (11.0...17.0)

Spread cm3 : 2.00

1000 s: (3.50)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 P  
Edition : 15.12.89  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 476 074

Injection pump  
Pump designation : PES6MW100/320RS1183  
EP type number : 0 413 406 169  
Governor  
Governor design. : RSV300...750MW1A802  
Governor no. : 0 420 085 113

Cust. part no. : 2-7937

Customer-spec. information  
Customer : MAN

Engine : D0826LE20

1st version kW : 116.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 681 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

CO4

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 11.80...11.90  
Del.quantity cm3/ : 14.4...14.6  
100 s: (14.2...14.8)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 5.7...6.4  
Del.quantity cm3/ : 3.0...3.4  
100 s: (2.8...3.6)  
Spread cm3 : 0.6  
100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 144.0...146.0  
1000 : (142.0...148.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 34...42

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 777...790  
4th rack travel in: 950  
Speed rpm : 030...1.70

#### LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.70...6.40  
Rack travel in mm : 2.00  
Speed rpm : 310...370

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...135.0  
1000 s: (122.0...138.0)

#### HIGH IDLE

##### 1st version

Speed rpm : 782  
Rack travel in mm : 4.00  
Spread cm3 : 3.50  
1000 s: (6.00)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.70...6.40  
Del.quantity cm3/ : 30.0...34.0  
1000 s: (28.5...36.5)  
Spread cm3 : 6.00  
1000 s: (9.00)

Remarks:

:

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 F  
Edition : 02.10.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 076  
  
Injection pump  
Pump designation : PES6MW100/720RS1120-1  
EP type number : 0 413 406 172  
Governor  
Governor design. : RSV350...1300MWOA2-1  
Governor no. : 0 420 085 125

Customer-spec. information  
Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 142.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm3/ : 1.0...1.2

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 95.0...97.0

1000 : (93.0...99.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 106...114

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00

Speed rpm : 1340...1345

2nd rack travel in: 4.00

Speed rpm : 1397...1410  
3rd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70  
5th rack travel in: 1335...1350  
Speed rpm : 12.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Rack travel in mm : 2.00  
Speed rpm : 420...480

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.60...11.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 12.10...12.20

2nd pressure hPa : 360

Rack travel in m: 12.60...12.90

3rd pressure hPa : 700

Rack travel in m: 13.00...13.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 750

Del.quantity cm3/ : 83.0...86.0  
1000 s: (80.5...88.5)

Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 50.0...52.0  
1000 s: (48.0...54.0)

#### BREAKAWAY

#### 1st version

C07

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...95.0  
1000 s: (92.0...98.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Del.quantity cm3/ : 10.0...12.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

Test hydr. locking device for starting  
with 800...1200 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 76  
 Edition : 09.11.89  
 Replaces : 15.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 077  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1300MWOA3  
 Governor no. : 0 420 085 126

Customer-spec. information  
 Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 127.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 8.1...8.3

100 s: (7.9...8.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm<sup>3</sup>/ : 1.0...1.2

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 81.0...83.0

1000 : (79.0...85.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 103...111

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.60

Speed rpm : 1340...1345

2nd rack travel in: 4.00  
Speed rpm : 1397...1410  
3rd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70  
5th rack travel in: 1335...1350  
Speed rpm : 10.60

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 900  
Rack travel in m: 11.90...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 900  
Del.quantity cm3/ : 76.0...79.0  
1000 s: (73.5...81.5)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.90

Del.quantity cm3/ : 10.0...12.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4010  
 Edition : 06.10.89  
 Replaces : 11.03.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 023  
 Injection pump  
 Pump designation : PE8MW100/720LS1128  
 EP type number : 0 413 508 103  
 Governor  
 Governor design. : RQV300...1150MW56-3  
 Governor no. : 0 420 083 154

Customer-spec. information  
 Customer : KHD

Engine : BF 8L 513

1st version kW : 225.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 9.80...10.20

2nd speed rpm : 1220

travel mm : 8.80...9.00

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 1.10...1.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 142.0...144.0

1000 : (140.0...146.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1380  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 800  
Rack travel in m: 13.00...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 660  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 1000  
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 220 (250)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 142.5...145.5  
1000 s: (140.0...148.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4D12  
 Edition : 06.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 025  
 Injection pump  
 Pump designation : PE8MW100/720LS1128  
 EP type number : 0 413 508 103  
 Governor  
 Governor design. : RQ300/1150MW63-3  
 Governor no. : 0 420 082 030

Customer-spec. information  
 Customer : KHD

Engine : BF 8L 513

1st version kW : 225.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.90...13.00  
 Del. quantity cm<sup>3</sup>/ : 14.2...14.4  
 100 s: (14.0...14.6)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s: (1.1...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280  
 travel mm : 9.00...9.80  
 2nd speed rpm : 1220  
 travel mm : 6.60...6.80  
 3rd speed rpm : 650  
 travel mm : 5.70...6.30  
 4th speed rpm : 300  
 travel mm : 1.10...1.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 1000  
 Del. quantity : 142.0...144.0  
 1000 : (140.0...146.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 29...37

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION  
Speed rpm : 320...400

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 800  
Rack travel in m: 12.00...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 660  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 1000

Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 142.5...145.5  
1000 s: (140.0...148.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 14,3D13  
Edition : 13.10.89  
Replaces : 11.03.88  
Test oil : ISO-4113

Combination no. : 0 403 548 026

Injection pump  
Pump designation : PE8MW100/720LS1128  
EP type number : 0 413 508 103  
Governor  
Governor design. : RQ300/1150MW63-4  
Governor no. : 0 420 082 031

Customer-spec. information  
Customer : KHD

Engine : BF 8L 513

1st version kW : 243.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 15.1...15.3

100 s: (14.9...15.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280  
travel mm : 9.20...9.60

2nd speed rpm : 1220  
travel mm : 6.60...6.80

3rd speed rpm : 420  
travel mm : 4.20...4.80

4th speed rpm : 300  
travel mm : 1.20...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 30...38

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1310  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION  
Speed rpm : 320...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 710  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.9.  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 1000  
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (106.0...112.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4D16  
Edition : 06.10.89  
Replaces : 16.06.89  
Test oil : ISO-4113

Combination no. : 0 403 548 034

Injection pump  
Pump designation : PE8MW100/720LS1128  
EP type number : 0 413 508 103  
Governor  
Governor design. : RQ300/1150MW63-6  
Governor no. : 0 420 082 038

Customer-spec. information  
Customer : KHD

Engine : BF 8L 513

1st version kW : 243.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 15.1...15.3

100 s: (14.9...15.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 9.70...10.30

2nd speed rpm : 1210

travel mm : 7.40...7.60

3rd speed rpm : 650

travel mm : 5.20...5.80

4th speed rpm : 300

travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Setting point:  
Speed rpm : 750  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1310  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 500...540

CONSTANT REGULATION  
Speed rpm : 320...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 710  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 1000  
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (106.0...112.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,6 b  
 Edition : 21.04.89  
 Replaces : 1.66  
 Test oil : ISO-4113  
 Combination no. : 0 405 048 204  
 Injection pump  
 Pump designation : PE8AM80D310RS2004  
 EP type number : 0 415 088 201  
 Governor  
 Governor design. : RQ200/1150AB314DL  
 Governor no. : 0 420 202 091

Customer-spec. information  
 Customer : KHD

Engine : F8L714A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 7.1...7.2

100 s: (6.9...7.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 200.0

Rack travel in mm : 7.4...7.6

Del.quantity cm<sup>3</sup>/ : 0.7...1.5

100 s: (0.5...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 71.0...72.0

1000 : (69.5...73.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.50

Speed rpm : 1195...1210

2nd rack travel in: 4.00

Speed rpm : 1230...1260

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 200  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 270...310

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 12.70...12.80  
3rd speed rpm : 705  
Rack travel in m: 12.30...12.50  
4th speed rpm : 900  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1030  
Del.quantity cm3/ : 70.0...72.0  
1000 s: (68.0...74.0)  
Speed rpm : 600  
Del.quantity cm3/ : 72.0...75.0  
1000 s: (70.0...77.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 17,4 a  
 Edition : 02.10.89  
 Replaces : 2.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 405 638 201  
 Injection pump  
 Pump designation : PE8PM120A120RS7119  
 EP type number : 0 415 628 201  
 Governor  
 Governor design. : RQ350/1150PA791  
 Governor no. : 0 421 801 340

Customer-spec. information  
 Customer : PERKINS

Engine : MCY 80

1st version kW : 410.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 6- 5- 4- 8-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 1200  
 Del.quantity : 257.0...259.0  
 1000 : (254.0...262.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.60  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 250  
Minimum rack travel: 6.40  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 890  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 590  
Rack travel in m: 11.30...11.50

#### START CUT-OUT

Speed 1/min : 300 (0)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm3/ : 259.0...265.0  
1000 s: (256.0...268.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 192.0...196.0  
1000 s: (190.0...198.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...215.0  
1000 s: (192.0...218.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 37,4 C  
Edition : 18.1.89  
Replaces : 20.10.87  
Test oil : ISO-4113

Combination no. : 0 406 039 111

Injection pump  
Pump designation : PE10ZWM160/120RS1043  
EP type number : 0 416 069 001  
Governor  
Governor design. : RQU425/1200ZWA68R  
Governor no. : 0 422 407 036

Customer-spec. information  
Customer : MTU

Engine : MB 838 KA

1st version kW : 100  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 016

Outside diameter  
x Wall thickness  
x Length mm : 8,00X2,00X1500

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60  
: (2.45...2.65)  
Rack travel in mm : 12.00  
Firing order : 10-3-4-5-6-7-8-1-2-9

Phasing : 0-27-72-99-144-171-  
216-243-288-315  
Tolerance + - ° : 0.50(0.75)

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 15.00  
Del.quantity cm3/ : 51.5...53.5  
100 s: (51.0...54.0)  
Spread cm3 : 1.5  
100 s: (2.2)

2nd speed rpm : 1000  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 26.5...28.5  
100 s: (26.0...29.0)  
Spread cm3 : 1.5  
100 s: (2.2)  
3rd speed rpm : 300  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 15.0...18.0  
100 s: (14.5...18.5)  
Spread cm3 : 2.0  
100 s: (3.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1200  
Rack travel in mm : 18.00...18.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Del.quantity : 505.0...515.0  
1000 : (500.0...520.0)  
Spread cm3 : 15.0  
1000 : (22.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...58

Testing:  
1st rack travel in: 15.00  
Speed rpm : 1200  
2nd rack travel in: 14.00  
Speed rpm : 1225...1240

3rd rack travel in: 4.00  
Speed rpm : 1312...1352  
4th rack travel in: 1339...1389  
Speed rpm : 0.01

LOW IDLE 1  
Control Lever  
position degrees: 20...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.80

Testing:  
Speed rpm : 200  
Minimum rack trave: 18.00  
Speed rpm : 300  
Rack travel in mm : 12.60...16.60  
Rack travel in mm : 6.80  
Speed rpm : 425  
Speed rpm : 1275  
Maximum rack trave: 0.01  
Rack travel in mm : 1.50  
Speed rpm : 600...1200

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1225...1240

#### HIGH IDLE

1st version  
Rack travel in mm : 4.00  
Spread cm<sup>3</sup> : 12.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.80  
Del.quantity cm<sup>3</sup>/ : 104.0...111.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 10.0  
1000 s: (-)

Remarks:

:

Set idle stop at 425 min -1 to a  
control-rod travel of 6.8 mm.

Limit shutoff stop screw to 1.0 mm.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 6,1 a  
Edition : 23.08.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 030 432  
Injection pump  
Pump designation : PES6A80D410RS1334  
Governor  
Governor design. : RSV325...1150A8B2134  
L

Customer-spec. information  
Customer : KHD

Engine : F6L 912

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00  
: (1,85...2,05)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 4,40...4,60

100 s : (-)

Spread cm<sup>3</sup> : 0,3

100 s : (-)

2nd speed rpm : 200  
Rack travel in mm : 6,00  
Del.quantity cm<sup>3</sup>/ : 0,2...0,8  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del.quantity : 52,4...55,4  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 8,00  
Speed rpm : 1190...1200  
2nd rack travel in: 5,50  
Speed rpm : 1220...1240  
4th rack travel in: 1450  
Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6,00

Testing:

Speed rpm : 200  
Minimum rack travel: 19,00  
Speed rpm : 325  
Rack travel in mm : 5,80...6,20

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 900  
Rack travel in m: 9,70...9,90  
3rd speed rpm : 750  
Rack travel in m: 10,30  
4th speed rpm : 600  
Rack travel in m: 10,70...10,90

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 52,4...55,4  
1000 s: (49,4...58,4)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 1190...1200

#### HIGH IDLE

1st version

Speed rpm : 1230  
Rack travel in mm : 5,50

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 2,6 a  
Edition : 24.11.89  
Replaces : 29.2.88  
Test oil : ISO-4113

Combination no. : 9 400 083 422

Injection pump  
Pump designation : PES3A80D320/3RS1264  
EP type number : 9 400 083 053  
Governor  
Governor design. : RSV350...1200A2B627R  
Governor no. : 9 420 082 194

Customer-spec. information  
Customer : MWM

Engine : D225-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 5.0...5.1

100 s: (4.9...5.3)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : -

100 s: (-)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (49.0...53.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60  
5th speed rpm : 400  
Rack travel in m: 10.60...11.20

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Navy



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 2,6 a 1  
Edition : 24.11.89  
Replaces : 29.2.88  
Test oil : ISO-4113

Combination no. : 9 400 083 423

Injection pump  
Pump designation : PES3A80D320/3RS1264  
EP type number : 9 400 083 053  
Governor  
Governor design. : RSV350...900A7B627R  
Governor no. : 9 420 082 193

Customer-spec. information  
Customer : MWM

Engine : D225-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : -

100 s: (-)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del. quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 975...980  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 11.40...12.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,4 b  
Edition : 24.11.89  
Replaces : 29.2.88  
Test oil : ISO-4113

Combination no. : 9 400 083 426

Injection pump  
Pump designation : PES4A80D320/3RS1265  
EP type number : 9 400 083 055  
Governor  
Governor design. : RSV350...1200A2B627R  
Governor no. : 9 420 082 194

Customer-spec. information  
Customer : MWM

Engine : D225-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.40...9.50

Del.quantity cm<sup>3</sup>/ : 5.0...5.1

100 s: (4.9...5.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm<sup>3</sup>/ : -

100 s: (-)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (49.0...53.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60  
5th speed rpm : 400  
Rack travel in m: 10.60...11.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,4 b 1  
Edition : 24.11.89  
Replaces : 1.3.88  
Test oil : ISO-4113

Combination no. : 9 400 083 427

Injection pump  
Pump designation : PES4A80D320/3RS1265  
EP type number : 9 400 083 055  
Governor  
Governor design. : RSV350...900A7B627R  
Governor no. : 9 420 082 193

Customer spec. information  
Customer : MWM

Engine : D225-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : -

100 s: (-)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 975...980  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 11.40...12.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 5,1 a  
Edition : 24.11.89  
Replaces : 1.3.88  
Test oil : ISO-4113

Combination no. : 9 400 083 429

Injection pump  
Pump designation : PES6A80D320/3RS1261  
EP type number : 9 400 083 057  
Governor  
Governor design. : RSV350...900A7B627R  
Governor no. : 9 420 082 193

Customer-spec. information  
Customer : MWM

Engine : D225-6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : -

100 s: (-)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 975...980  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 11.40...12.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 5,1 a 1  
 Edition : 24.11.89  
 Replaces : 1.3.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 083 430  
 Injection pump  
 Pump designation : PES6A80D320/3RS1261  
 EP type number : 9 400 083 057  
 Governor  
 Governor design. : RSV350...1200A2B627R  
 Governor no. : 9 420 082 194

Customer-spec. information  
 Customer : MWM

Engine : D225-6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 5.0...5.1

100 s: (4.9...5.3)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : -

100 s: (-)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (49.0...53.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60  
5th speed rpm : 400  
Rack travel in m: 10.60...11.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 g  
Edition : 02.05.89  
Replaces : 1.9.88  
Test oil : ISO-4113

Combination no. : 9 400 085 248

Injection pump  
Pump designation : PES6A95D412RS2709  
EP type number : 9 400 083 099  
Governor  
Governor design. : RQV350...1400AB1202-  
1L  
Governor no. : 9 420 080 220

Customer-spec. information  
Customer : FORD (FTO)

Engine : 6.6 1 NA

1st version kW : 108.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness : 6.00X2.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
: (3.10...3.30)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 7.9...8.0

100 s: (7.7...8.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.5...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1420

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.60

3rd speed rpm : 700

travel mm : 4.20...4.60

4th speed rpm : 1100

travel mm : 6.10...6.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400  
Del.quantity : 79.0...80.0  
1000 : (77.0...82.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...66

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1550...1580  
4th rack travel in: 1720  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 460...530

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 70.0...73.0  
1000 s: (67.5...75.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 112.0...122.0  
1000 s: (-)

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (5.0...13.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 j  
 Edition : 24.11.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 085 266

Injection pump  
 Pump designation : PES6A95D410RS2751  
 EP type number : 9 400 084 013  
 Governor  
 Governor design. : RSV650...1250A8C2231  
 L  
 Governor no. : 9 420 083 229

Customer-spec. information  
 Customer : FORD (FNH)

Engine : 6,6 L NA

1st version kW : 101.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 6.00...7.00

## BASIC SETTING

1st speed rpm : 1220

---

Rack travel in mm : 11.00...11.10

---

Del.quantity cm<sup>3</sup>/ : 8.1...8.3

---

100 s: (7.8...8.5)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 650.0

Rack travel in mm : 6.7...6.9

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1220

Del.quantity : 81.0...83.0

1000 : (78.5...85.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:

1st rack travel in: 10.00  
Speed rpm : 1265...1270  
2nd rack travel in: 4.00  
Speed rpm : 1295...1300  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 730...790

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 69.0...73.0  
1000 s: (67.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 j 1  
Edition : 24.11.89  
Replaces : 1.9.88  
Test oil : ISO-4113

Combination no. : 9 400 085 267

Injection pump  
Pump designation : PES6A95D410RS2751  
EP type number : 9 400 084 013  
Governor  
Governor design. : RSV650...1250A8C2231  
-1L  
Governor no. : 9 420 083 230

Customer-spec. information  
Customer : FORD (FNH)

Engine : 6,6 L TC

1st version kW : 112.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
: (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 6.00...7.00

## BASIC SETTING

1st speed rpm : 1220

Rack travel in mm : 11.90...12.00

Del. quantity cm3/ : 9.1...9.3

100 s: (8.8...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0  
Rack travel in mm : 6.7...6.9  
Del. quantity cm3/ : 0.7...1.1  
100 s: (0.4...1.3)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1220  
Del. quantity : 91.0...93.0  
1000 : (88.5...95.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:

1st rack travel in: 10.90  
Speed rpm : 1265...1270  
2nd rack travel in: 4.00  
Speed rpm : 1300...1305  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 730...790

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 77.0...81.0  
1000 s: (75.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

APPLICATION :

Combine-harvester



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 j 2  
 Edition : 24.11.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 085 299

Injection pump  
 Pump designation : PES6A95D41ORS2751  
 EP type number : 9 400 084 013  
 Governor  
 Governor design. : RSV650...1250A8C2231  
 -2L  
 Governor no. : 9 420 083 236

Customer-spec. information  
 Customer : FORD (FNH)

Engine : 6,6 L TC

1st version kW : 123.8  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 6.00...7.00

## BASIC SETTING

1st speed rpm : 1220

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.5...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 6.7...6.9

Del.quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1220

Del.quantity : 98.0...100.0

1000 : (95.5...102.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 47...55

Testing:

1st rack travel in: 11.50  
Speed rpm : 1265...1270  
2nd rack travel in: 4.00  
Speed rpm : 1300...1305  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 730...790

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 83.0...87.0  
1000 s: (81.0...89.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 6.70...6.90  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 g  
 Edition : 24.11.89  
 Replaces : 15.8.89  
 Test oil : ISO-4113

Combination no. : 9 400 085 305

Injection pump  
 Pump designation : PES6A95D410RS2772  
 EP type number : 9 400 084 018  
 Governor  
 Governor design. : RQV300...1300AB1066-6L  
 Governor no. : 9 420 080 265

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 11

## BASIC SETTING

1st speed rpm : 1300

---

Rack travel in mm : 10.40...10.50

---

Del.quantity cm3/ : 8.9...9.1

---

100 s: (8.7...9.3)

---

Spread cm3 : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.1  
 Del.quantity cm3/ : 0.8...1.4  
 100 s: (0.6...1.6)

---

Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.80...1.30  
 2nd speed rpm : 500  
 travel mm : 2.30...2.80  
 3rd speed rpm : 750  
 travel mm : 4.10...4.30  
 4th speed rpm : 1500  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1500  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Aneroid pressure h: 700  
 Del.quantity : 89.0...91.0  
 1000 : (87.0...93.0)

---

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1630  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION  
Speed rpm : 420...550

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 800  
Rack travel in m: 10.90...11.00  
4th speed rpm : 1000  
Rack travel in m: 10.60...10.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 450  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 300  
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Aneroid pressure h: 700  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 88.0...91.0  
1000 s: (85.5...93.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 59.0...61.0  
1000 s: (57.0...63.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...115.0  
1000 s: (-)  
Rack travel in mm : 14.50...14.70

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 f  
Edition : 24.11.89  
Replaces : 15.8.89  
Test oil : ISO-4113

Combination no. : 9 400 085 307

Injection pump  
Pump designation : PES4A95D410RS2774  
EP type number : 9 400 084 019  
Governor  
Governor design. : RQV300...1300AB1228-1L  
Governor no. : 9 420 080 268

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 364 A

1st version kW : 85.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.45)

Rack travel in mm : 9.00...12.00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.0...9.2

100 s : (8.8...9.4)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 0.6...1.2

100 s : (0.4...1.4)

Spread cm3 : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.60

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1470...1500

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.90...7.10

## CONSTANT REGULATION

Speed rpm : 420...550

## TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.60...10.70

2nd speed rpm : 800

Rack travel in m: 11.00...11.10

4th speed rpm : 1000

Rack travel in m: 10.80...11.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 410

Rack travel in m: 10.80...10.90

3rd pressure hPa : 310

Rack travel in m: 10.10...10.30

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 84.5...87.5

1000 s: (82.0...90.0)

Aneroid pressure h: 700

Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 87.5...90.5

1000 s: (85.0...93.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 61.0...63.0

1000 s: (59.0...65.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 95.0...115.0

1000 s: (-)

Rack travel in mm : 14.00...14.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 f 1  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 309  
 Injection pump  
 Pump designation : PES4A95D410RS2774  
 EP type number : 9 400 084 019  
 Governor  
 Governor design. : RQV300...1400AB1065-18L  
 Governor no. : 9 420 080 278

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.45)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.08)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 6.6...6.8

100 s: (6.4...7.0)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3

100 s: (0.3)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.80...1.30

2nd speed rpm : 500  
 travel mm : 2.30...2.80

3rd speed rpm : 750  
 travel mm : 4.10...4.30

4th speed rpm : 1500  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 66.0...68.0

1000 : (64.0...70.0)

Spread cm3 : 3.50

1000 : (3.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1515...1545  
4th rack travel in: 1660  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.10...7.30

CONSTANT REGULATION  
Speed rpm : 450...580

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 51.0...54.0  
1000 s: (48.5...56.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.30  
Speed rpm : 1440...1450

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (-)  
Rack travel in mm : 14.20...14.40

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 g 2  
 Edition : 24.11.89  
 Replaces : 15.8.89  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 310  
 Injection pump  
 Pump designation : PES6A95D410RS2772  
 EP type number : 9 400 084 018  
 Governor  
 Governor design. : RQV300...1300AB1066-8L  
 Governor no. : 9 420 080 279

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 155.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1640  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION  
Speed rpm : 420...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.70  
2nd pressure hPa : 450  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 300  
Rack travel in m: 9.90...10.10

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 59.5...61.5  
1000 s: (57.5...63.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...115.0  
1000 s: (-)  
Rack travel in mm : 14.50...14.70

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 a2  
 Edition : 24.11.89  
 Replaces : 7.7.89  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 357  
 Injection pump  
 Pump designation : PE6P120A320RS3178  
 EP type number : 0 411 826 752  
 Governor  
 Governor design. : RQV250...1025PA657-10  
 Governor no. : 0 421 813 567

Customer spec. information  
 Customer : VOLVO

Engine : TD 122 FS

1st version kW : 287.0  
 Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 900

travel mm : 6.30...6.70

5th speed rpm : 1025

travel mm : 7.30...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 252.0...254.0  
1000 : (249.0...257.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 250  
Rack travel in mm : 4.80...5.10

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.20  
2nd pressure hPa : 120  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 810  
Rack travel in m: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm3/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.80...5.10  
Del.quantity cm3/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 r 1  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 387  
 Injection pump  
 Pump designation : PES5P120A720LS7174  
 EP type number : 0 412 725 806  
 Governor  
 Governor design. : RQ300/1050PA774-2  
 Governor no. : 0 421 801 450

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kW : 184.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 485...525

TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.40...14.60  
2nd speed rpm : 750  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 750  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : 850  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 6  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 390  
Injection pump  
Pump designation : PES6P120A720LS7114-3  
EP type number : 0 412 726 820  
Governor  
Governor design. : RQ300/1050PA911  
Governor no. : 0 421 801 476

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 257.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600  
Rack travel in mm : 13.60...13.80  
Del.quantity cm3/ : 22.9...23.1  
100 s: (22.6...23.4)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.8...6.2  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 700  
Rack travel in m: 14.10...14.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 600  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1100  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm3/ : 229.0...233.0  
1000 s: (226.0...236.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 244.0...247.0  
1000 s: (241.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:  
\* Increase in control-rod travel with  
respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 b1  
 Edition : 24.11.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 393  
 Injection pump  
 Pump designation : PE6P120A72ORS7126  
 EP type number : 0 412 626 815  
 Governor  
 Governor design. : RQV200...1000PA725-1  
 Governor no. : 0 421 813 552

Customer-spec. information  
 Customer : SAAB SCANIA

Engine : DSC 11 - 18

1st version kW : 265.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 1.5...1.9

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.40...5.00

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1160

travel mm : 9.90...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 13.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 225  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 340...400

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 510  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm3/ : 223.0...231.0  
1000 s: (221.0...233.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 150.0...154.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5g11  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 408  
 Injection pump  
 Pump designation : PES6P100A720LS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1000PA828-2  
 Governor no. : 9 420 080 247

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT.

1st version kW : 140.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.3...1.7  
 100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1055  
 travel mm : 8.50...8.60

2nd speed rpm : 300  
 travel mm : 1.10...1.40

3rd speed rpm : 500  
 travel mm : 3.40...3.70

4th speed rpm : 700  
 travel mm : 5.20...5.50

5th speed rpm : 900  
 travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1055  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 500

Del.quantity : 122.0...124.0  
1000 : (120.0...126.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 145  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 75  
Rack travel in m: 9.50...9.70

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

E07

Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 94.0...96.0  
1000 s: (92.0...98.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 g  
Edition : 24.11.89  
Replaces : 15.8.89  
Test oil : ISO-4113

Combination no. : 9 400 087 412

Injection pump  
Pump designation : PES6P120A720RS3228  
EP type number : 9 400 087 065  
Governor  
Governor design. : RQV350...1200PA863-7  
Governor no. : 9 420 080 270

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7.8L TC

1st version kW : 138.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 403

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...29

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 350.0  
Rack travel in mm : 7.8...8.0  
Del.quantity cm3/ : 2.2...2.6  
100 s: (1.9...2.8)  
Spread cm3 : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1360  
travel mm : 8.40...8.50  
2nd speed rpm : 1000  
travel mm : 5.50...5.90  
3rd speed rpm : 800  
travel mm : 4.40...4.80  
4th speed rpm : 500  
travel mm : 2.60...3.00  
5th speed rpm : 300  
travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1490  
Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 700

Del.quantity : 137.5...139.5  
1000 : (135.5...141.5)  
Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

#### Testing:

1st rack travel in: 12.60  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00

#### CONSTANT REGULATION

Speed rpm : 390...460

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.00  
3rd speed rpm : 1050  
Rack travel in m: 13.60...13.70  
4th speed rpm : 900  
Rack travel in m: 13.90...14.00

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.90...14.00

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.20  
2nd pressure hPa : 325

Rack travel in m: 12.60...12.70  
3rd pressure hPa : 400  
Rack travel in m: 13.30...13.70

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 119.0...123.0  
1000 s: (117.0...125.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 71.0...75.0  
1000 s: (69.0...77.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.80...8.00  
Del.quantity cm3/ : 22.0...26.0  
1000 s: (19.5...28.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 g 5  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 414  
 Injection pump  
 Pump designation : PES4P100A720LS501  
 EP type number : 9 400 087 051  
 Governor  
 Governor design. : RQV350...1100PA828-3  
 Governor no. : 9 420 080 266

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DIT.

1st version kW : 103.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm3/ : 1.5...1.9  
 100 s: (1.2...2.1)

Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 8.50...8.60

2nd speed rpm : 350  
 travel mm : 1.30...1.50

3rd speed rpm : 500  
 travel mm : 2.90...3.20

4th speed rpm : 700  
 travel mm : 4.50...4.80

5th speed rpm : 900  
 travel mm : 6.00...6.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500

Del.quantity : 129.0...131.0  
1000 : (127.0...133.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 11.10...11.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 290  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 125  
Rack travel in m: 8.80...9.00

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

E11

Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm3/ : 128.0...132.0  
1000 s: (126.0...134.0)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm3/ : 81.0...83.0  
1000 s: (79.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 h  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 416  
Injection pump  
Pump designation : PES6P110A720RS3226  
EP type number : 9 400 087 066  
Governor  
Governor design. : RQV350...1000PA863-8  
Governor no. : 9 420 080 271

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7,8 L TC

1st version kW : 160.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 403

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 468 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.55...4.65  
: (4.50...4.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 13.8...14.0

100 s: (13.6...14.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 2.7...3.1

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 9.30...9.70

2nd speed rpm : 1000

travel mm : 6.90...7.10

3rd speed rpm : 500

travel mm : 2.20...3.00

4th speed rpm : 350

travel mm : 1.40...1.70

5th speed rpm : 250

travel mm : 0.50...1.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 7.00...9.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 138.0...140.0  
1000 : (136.0...142.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 12.00  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10

#### CONSTANT REGULATION

Speed rpm : 390...460

#### TORQUE CONTROL

Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.90...14.00  
3rd speed rpm : 850  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 405  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 695

Rack travel in m: 13.00...13.30

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (151.0...155.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (77.0...83.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 147.0...167.0  
1000 s: (142.0...172.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 27.5...31.5  
1000 s: (25.0...34.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Delivery-valve spring pre-tension  
3.0...3.2 mm.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 v 1  
 Edition : 24.11.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 423  
 Injection pump  
 Pump designation : PES5P120A720LS7175  
 EP type number : 0 412 725 807  
 Governor  
 Governor design. : RQ300/1050PA774-4  
 Governor no. : 0 421 801 453

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM449 LA

1st version kW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 i  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 424  
  
Injection pump  
Pump designation : PE6P120A720RS7020  
EP type number : 0 412 626 828  
Governor  
Governor design. : RQV200...1000PA539-8  
Governor no. : 0 421 813 635

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DS 11 34

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
travel mm : 1.20...1.60

2nd speed rpm : 350  
travel mm : 2.30...2.90

3rd speed rpm : 650  
travel mm : 4.40...5.00

4th speed rpm : 1045  
travel mm : 8.40...8.60

5th speed rpm : 1150  
travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 208.0...210.0

1000 : (205.0...213.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 225  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 350...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 520  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 320  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 198.0...206.0  
1000 s: (196.0...208.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.60...4.80

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO  
diaphragm.

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 f 1  
Edition : 24.11.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 425  
  
Injection pump  
Pump designation : PES6P120A72DLS7181  
EP type number : 0 412 726 824  
Governor  
Governor design. : RQ300/1050PA911-1  
Governor no. : 0 421 801 481

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 294.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 27.4...27.6

100 s: (27.1...27.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 274.0...276.0

1000 : (271.0...279.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

# Testing:

1st rack travel in: 13.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

## TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 850  
Rack travel in m: 15.60...15.80

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.20...15.40

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 700  
Rack travel in m: 14.00...14.20  
3rd pressure hPa : 1300  
Rack travel in m: 15.40...15.60  
4th pressure hPa : 1450  
Rack travel in m: 15.90...16.10  
5th pressure hPa : -  
Rack travel in m: 10.00...10.50

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050

Del.quantity cm3/ : 269.0...272.0  
1000 s: (266.0...275.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 700  
Del.quantity cm3/ : 298.0...301.0  
1000 s: (295.0...304.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1095...1110

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a11  
Edition : 28.09.89  
Replaces : 2.5.89  
Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100AOC2190  
-3R  
Governor no. : 9 420 234 125

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 129.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del.quantity : 95.5...97.5

1000 : (93.5...99.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3911953

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 A13  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : ISO4113  
  
Injection pump : VE 4/12F1050 R123-4  
Type number : 0 460 424 010  
Customer Part-No. : 3 917 654

Customer-specific information  
Customer : CDC

Engine : 4 BT 390

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm : 2.00  
mm :  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2.3...2.7

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.5...5.1

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 85.0...86.0  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 18.5...24.5  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1120  
Del.quantity cm<sup>3</sup>/  
1000H: 47.0...53.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1.2...2.0  
mm: (0.9...2.3)  
2nd speed 1/min: 900  
TD travel mm: 2.3...2.7  
mm: (1.8...2.2)  
3rd speed 1/min: 1050  
TD travel mm: 3.0...3.8  
mm: (2.7...4.1)

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3.9...4.5  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.5...5.1  
3rd speed 1/min: 1050  
Supply-pump  
pressure bar: 5.2...5.8

Overflow quantity at overflow valve:

1st speed 1/min: 400

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1185  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1140  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
3rd speed 1/min: 1120  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)  
4th speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 79.5...82.5  
1000H.: (78.0...84.0)  
5th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 85.0...86.0  
1000H.: (82.5...88.5)  
6th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 84.5...88.5  
1000H.: (82.5...90.5)  
7th speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 82.5...90.5  
1000H.: (80.5...92.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 18.5..24.5  
1000H.: (14.5..28.5)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
ind. 1000H: 100.0

2nd speed 1/min: 200  
max. 1000H : 85.0

Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5.0...5.4
MS	mm	:	1.3...1.7
SVS max.	mm	:	4.0
XK	mm	:	20.2...22.2
XL	mm	:	13.2...16.5

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 A12  
Edition : 16.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1100 R123-5  
Type number : 0 460 424 011  
Customer Part-No. : 3 917 655

Customer-specific information  
Customer : CDC

Engine : 4 BT 390

Power k: 60  
Speed 1/mi: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC): +0.02(0.04)

Start of delivery block  
Piston stroke mm: -  
mm: -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2.3...2.7

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.3...4.9

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm3/  
1000H.: 70.5...71.5  
Dispersion cm3/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 10.7...11.3  
Dispersion cm3/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1120  
Del.quantity cm3/  
1000H: 52.0...58.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 97.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0.4...1.2  
mm: (0.1...1.5)  
2nd speed 1/min: 900  
TD travel mm: 2.3...2.7  
mm: (1.8...3.2)  
3rd speed 1/min: 1100  
TD travel mm: 3.3...4.1  
mm: (3.0...4.4)

Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump  
pressure bar: 2.1...2.7  
2nd speed 1/min: 900

Supply-pump  
pressure bar: 4.3...4.9  
3rd speed 1/min: 1100  
Supply-pump  
pressure bar: 5.2...5.8

Overflow quantity at overflow valve:

1st speed 1/min: 400  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1100  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1230  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1160  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
3rd speed 1/min: 1120  
Del.quantity cm<sup>3</sup>/: 52.0...58.0  
1000H.: (49.0...61.0)  
4th speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 64.5...67.5  
1000H.: (63.0...69.0)  
5th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 70.5...71.5  
1000H.: (68.0...74.0)  
6th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 70.5...74.5  
1000H.: (68.5...76.5)  
7th speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 61.5...69.5  
1000H.: (59.5...71.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 0..3

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 100.0

2nd speed 1/min: 200  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 85.0

Shutoff electromagnet:

Cut-in  
min. voltage : 20  
Rated voltage : 24

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5.1...5.4
MS	mm	: 1.4...1.6
SVS max.	mm	: 3.4
XK	mm	: 20.2...22.2
XL	mm	: 12.5...15.9

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 B3  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : ISO4113  
  
Injection pump : VE 4/12F1400 R182  
Type number : 0 460 424 015  
Customer Part-No. : 3 917 642

Customer-specific information  
Customer : CDC

Engine : 4 BT-3.9

Power k: 78  
Speed 1/mi: 2800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.8  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 750  
Setting value mm: 1.4...1.8

## Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 750  
Setting value bar: 4.7...5.3

## Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/  
1000H.: 81.5...82.5  
Dispersion cm<sup>3</sup>/ : 4.0  
1000H : (4.5)

## Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 64.0...65.0

## Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 20.0...26.0  
Dispersion cm<sup>3</sup>/ : 5.5  
1000H.: (7.0)

## Full-load speed regulation:

Speed 1/min: 1600  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/  
1000H: 22.0...28.0

## Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm<sup>3</sup>/1000H.: 97.0

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 0.6...1.4  
mm: (0.3...1.7)  
2nd speed 1/min: 1100

Charge press. hPa: 750  
TD travel mm: 1.4...1.8  
mm: (0.9...2.5)  
3rd speed 1/min: 1250  
Charge press. hPa: 750  
TD travel mm: 2.1...2.9  
mm: (1.8...3.2)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 750  
Supply-pump pressure bar: 2.1...2.7  
2nd speed 1/min: 1100  
Charge press. hPa: 750  
Supply-pump pressure bar: 4.7...5.3  
3rd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump pressure bar: 5.2...5.8

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting point hPa: 300  
LDA stroke mm: 7.5  
Del.quantity cm<sup>3</sup>/: 77.5...78.5  
1000H.: (74.0...82.0)  
2nd speed 1/min: 1750  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1600  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/: 22.0...28.0  
1000H.: (19.0...31.0)  
4th speed 1/min: 1475  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/: 54.5...62.5  
1000H.: (52.5...64.5)  
5th speed 1/min: 1400  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/: 72.0...75.0  
1000H.: (70.5...76.5)  
6th speed 1/min: 1100  
Charge press. hPa: 750

Del.quantity cm<sup>3</sup>/: 81.5...82.5  
1000H.: (79.0...85.0)  
7th speed 1/min: 900  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/: 82.5...86.5  
1000H.: (80.5...88.5)  
8th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 64.0...65.0  
1000H.: (60.5...68.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/: 0.3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: 6.0...16.0  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
ind. 1000H: 97.0

2nd speed 1/min: 200  
Charge press. hPa: -  
max. 1000H : 85.5

Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5.2...5.5  
MS mm : 1.3...1.7  
SVS max. mm : 4.6

Remarks:



\* Correction at adjusting nut (46)



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 D5  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : ISO4113  
  
Injection pump : VE 4/12F1250 R230-1  
Type number : 0 460 424 027  
Customer Part-No. : 3 910 678

Customer-specific information  
Customer : CDC

Engine : 4 BT 3.9 AUTO

Power k: 80  
Speed 1/mi: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 52...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: -  
mm: -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

F01

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 1.8...2.2

Supply-pump pressure:

Speed 1/min: 1110  
Charge press. hPa: 1000  
Setting value bar: 4.7...5.3

Full-load del. with charge press.:

Speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 69.5...70.5  
Dispersion cm3/ : 4.0  
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 36.5...37.5

Low-idle speed regulation:

Speed 1/min: 340  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 8.0...14.0  
Dispersion cm3/ : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 49.0...55.0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm3/1000H.: 40.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press. hPa: 1000  
TD travel mm: 0.3...1.1  
mm: (0.0...1.4)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000

TD travel mm: 1.8...2.2  
mm: (1.3...2.7)  
3rd speed 1/min: 1200  
Charge press. hPa: 1000  
TD travel mm: 2.4...3.2  
mm: (2.1...3.5)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.1...2.7  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.7...5.3  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.4...6.0

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 400  
LDA stroke mm: 6.0  
Del.quantity cm<sup>3</sup>/: 67.0...68.0  
1000H.: (63.5...71.5)  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1430  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 49.0...55.0  
1000H.: (46.0...58.0)  
5th speed 1/min: 1250  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 65.5...68.5  
1000H.: (64.0...70.0)  
6th speed 1/min: 1100  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 66.5...69.5  
1000H.: (64.5...71.5)  
7th speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 69.5...70.5  
1000H.: (67.0...73.0)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 73.5...81.5  
1000H.: -  
9th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 36.5...37.5  
1000H.: (33.0...41.0)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0...3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 340  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.3  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 340  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (5.0...17.0)  
2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
ind. 1000H: 40.0  
2nd speed 1/min: 380  
Charge press. hPa: -  
max. 1000H : 40.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

#### Mounting and assembly dimensions:

#### Designation

K mm : -  
KF mm : 5.1...5.4

MS	mm	: 1.1..1.35
SVS max.	mm	: 2.2
XK	mm	: 20.2...22.2
XL	mm	: 11.9...15.3

Remarks:

\* Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N26  
Edition : 18.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1150 R231-1  
Type number : 0 460 424 029  
Customer Part-No. : 3 909 591

Customer-specific information  
Customer : CDC

Engine : 4 BT 3.9

Power k: 82  
Speed 1/mi: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02$

Start of delivery block  
Piston stroke mm: 1.55  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 850  
Charge press. hPa: 1000  
Setting value mm: 4.0...4.4

## Supply-pump pressure:

Speed 1/min: 850  
Charge press. hPa: 1000  
Setting value bar: 5.6...6.2

## Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 85.5...86.5  
Dispersion cm<sup>3</sup>/ : 4.0  
1000H : (4.5)

## Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 63.5...64.5

## Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/ : 5.5  
1000H.: (7.0)

## Full-load speed regulation:

Speed 1/min: 1220  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H: 62.5...68.5

## Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 500\*  
Charge press. hPa: 1000  
TD travel mm: 1.8...2.6\*  
mm: (1.5...2.9)  
2nd speed 1/min: 850

Charge press. hPa: 1000  
 TD travel mm: 4.0...4.4  
 mm: (3.5...4.9)  
 3rd speed 1/min: 1150  
 Charge press. hPa: 1000  
 TD travel mm: 5.2...6.0  
 mm: (4.9...6.3)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.0...4.6  
 2nd speed 1/min: 850  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 5.6...6.2  
 3rd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.9...7.5

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Charge press. hPa: -  
 Overflow : 41...83  
 quantity cm<sup>3</sup>/10s: (26...98)  
 2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Overflow : 55...138  
 quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting point hPa: 350  
 Del.quantity cm<sup>3</sup>/: 79.5...80.5  
 1000H.: (76.0...84.0)  
 2nd speed 1/min: 1320  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 0.0...3.0  
 1000H.: -  
 3rd speed 1/min: 1260  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 15.0...55.0  
 1000H.: -  
 4th speed 1/min: 1220  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 62.5...68.5  
 1000H.: (59.5...71.5)  
 5th speed 1/min: 1150  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 76.0...79.0  
 1000H.: (74.5...80.5)  
 6th speed 1/min: 1000  
 Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 79.5...82.5  
 1000H.: (77.5...84.5)  
 7th speed 1/min: 850  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 85.5...86.5  
 1000H.: (83.0...89.0)  
 8th speed 1/min: 500  
 Charge press. hPa: 1000  
 Del.quantity cm<sup>3</sup>/: 90.0...98.0  
 1000H.: -  
 9th speed 1/min: 500  
 Charge press. hPa: -  
 Del.quantity cm<sup>3</sup>/: 63.5...64.5  
 1000H.: (60.0...68.0)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1150  
 Del.quantity cm<sup>3</sup>/: 0..3  
 1000H.: -

#### Electr. shutoff:

Speed 1/min: 375  
 ELAB volt: -  
 Del.quantity cm<sup>3</sup>/: 0.0...3.0  
 max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
 Del.quantity cm<sup>3</sup>/: 8.0...14.0  
 1000H.: (6.0...16.0)  
 2nd speed 1/min: 450  
 Del.quantity cm<sup>3</sup>/: 0.0...4.0  
 1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 130  
 Charge press. hPa: -  
 ind. 1000H.: 60.0  
 2nd speed 1/min: 230  
 Charge press. hPa: -  
 max. 1000H.: 60.0

#### Shutoff electromagnet:

Cut-in  
 min. voltage : 20.0  
 Rated voltage : 24.0

#### Mounting and assembly dimensions:

#### Designation

K mm : -  
 KF mm : 5.0...5.4

MS                    mm : 1,0...1,4

Remarks:  
\* Correction at adjusting nut (46)



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P  
Edition : 17.01.90  
replaces : 20.10.89  
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R359  
Type number : 0 460 424 054

Customer-specific information  
Customer : CDC

Engine : 4 BTA

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1.25  
mm:  $\pm 0.02(0.06)$   
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000

F07

Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 5.3...5.9

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 83.0...84.0  
Dispersion cm<sup>3</sup>/  
1000H.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 53.0...54.0

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 10.0...12.0  
Dispersion cm<sup>3</sup>/  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 68.0...74.0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 80.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400  
Charge press. hPa: -  
TD travel mm: 2.9...3.9  
mm: -

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1000



TD travel mm: 1.9...1.7  
mm: (0.6...2.0)

KSB solenoid-operated  
valve volt: 12  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: 2.0...2.4  
mm: (1.5...2.9)

KSB solenoid-operated  
valve volt: 12  
4th speed 1/min: 1250  
Charge press. hPa: 1000  
TD travel mm: 2.8...3.6  
mm: (2.5...3.9)

KSB solenoid-operated  
valve volt: 12

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 2.6...3.2  
KSB solenoid-operated  
valve volt: 12  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.9...5.5  
KSB solenoid-operated  
valve volt: 12  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.3...5.9  
4th speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.0...6.6

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting  
point hPa: 535

KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 71.5...72.5  
1000H.: (68.0...76.0)

2nd speed 1/min: 1450  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

3rd speed 1/min: 1430  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 15.0...45.0  
1000H.: -

4th speed 1/min: 1330  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 68.0...74.0  
1000H.: (65.0...77.0)

5th speed 1/min: 1250  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)

6th speed 1/min: 1100  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 77.5...80.5  
1000H.: (75.5...82.5)

7th speed 1/min: 850  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 83.0...84.0  
1000H.: (80.5...86.5)

8th speed 1/min: 500  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 53.0...54.0  
1000H.: (49.5...57.5)

9th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 94.0...104.0  
1000H.: -

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 10.0..12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 0.0...2.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 80.0

2nd speed 1/min: 250  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 40.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : 3.6...3.8  
KF mm : K-OT  
MS mm : 0.8...1.2  
SVS max. mm : 2.1

Remarks:  
: C.D.C. # 391 7535

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N30  
Edition : 18.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1050 R388  
Type number : 0 460 424 064

Customer-specific information  
Customer : CDC

Engine : 4 BT 3.9

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC): +0.02(0.04)

Start of delivery block  
Piston stroke mm : 2.0  
mm : +0.02(0.06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2.3...2.7

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.5...5.1

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 64.5...65.5  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 420  
Del.quantity cm<sup>3</sup>/  
1000H.: 18.5...24.5  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1110  
Del.quantity cm<sup>3</sup>/  
1000H.: 32.0...38.0

Start:

Speed 1/min: 100  
mind cm<sup>3</sup>/1000H.: 100.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1.1...1.9  
mm: (0.8...2.2)  
2nd speed 1/min: 900  
TD travel mm: 2.3...2.7  
mm: (1.8...3.2)  
3rd speed 1/min: 1050  
TD travel mm: 3.2...4.0  
mm: (2.9...4.3)

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3.8...4.4  
bar: (3.6...4.6)  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.5...5.1  
bar: (4.3...5.3)  
3rd speed 1/min: 1050

Supply-pump  
pressure bar: 4.9...5.5  
bar: (4.7...5.7)

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1160  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1110  
Del.quantity cm<sup>3</sup>/: 32.0...38.0  
1000H.: (29.0...41.0)  
3rd speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 59.5...62.5  
1000H.: (58.0...64.0)  
4th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 64.5...65.5  
1000H.: (62.0...68.0)  
5th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 64.0...68.0  
1000H.: (62.0...70.0)  
6th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 58.0...66.0  
1000H.: (56.0...68.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 420  
Del.quantity cm<sup>3</sup>/: 18.5..24.5  
1000H.: (16.5..26.5)  
2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
ind. 1000H: 100.0

2nd speed 1/min: 200  
max. 1000H : 105.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.3...1.7  
SVS max. mm : 4.2

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N31  
Edition : 18.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1050 R389  
Type number : 0 460 424 065

Customer-specific information  
Customer : CDC

Engine : 4 BT-390

Power k: 81  
Speed 1/mi: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC): +0.02(0.04)

Start of delivery block  
Piston stroke mm: 1.55  
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value mm: 3.4...3.8  
KSB solenoid-operated  
valve volt: 12

Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 5.0...5.6  
KSB solenoid-operated  
valve volt: 12

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 89.5...90.5  
KSB solenoid-operated  
valve volt : 12  
Dispersion cm3/ : 4.0  
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 63.5...64.5  
KSB solenoid-operated  
valve volt: 12

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 8.0...14.0  
KSB solenoid-operated  
valve volt: 12  
Dispersion cm3/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 59.0...65.0  
KSB solenoid-operated  
valve volt: 12

Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm3/1000H.: 60.0

KSB solenoid-operated  
valve volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 1.7...2.5  
mm: (1.4...2.8)

KSB solenoid-operated  
valve volt: 12  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
TD travel mm: 3.4...3.8  
mm: (2.9...4.3)

KSB solenoid-operated  
valve volt: 12  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
TD travel mm: 4.7...5.5  
mm: (4.4...5.8)

KSB solenoid-operated  
valve volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3.9...4.5

2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.0...5.6

KSB solenoid-operated  
valve volt: 12  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.3...6.9

KSB solenoid-operated  
valve volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 1050  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12

Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 350  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.0...84.0)

2nd speed 1/min: 1180  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

3rd speed 1/min: 1120  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 15.0...45.0  
1000H.: -

4th speed 1/min: 1100  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 59.0...65.0  
1000H.: (56.0...68.0)

5th speed 1/min: 1050  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)

6th speed 1/min: 900  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 79.5...87.5  
1000H.: -

7th speed 1/min: 750  
Charge press. hPa: 1000  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 89.5...90.5  
1000H.: (87.0...93.0)

8th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm<sup>3</sup>/: 63.5...64.5  
1000H.: (60.0...68.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050

Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm3/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm3/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12  
Del.quantity cm3/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
ind. 1000H: 60.0

2nd speed 1/min: 230  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12  
max. 1000H : 60.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.0...1.4  
SVS max. mm : 2.2

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N32  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1200 R390  
Type number : 0 460 424 067

Customer-specific information  
Customer : CDC

Engine : 4 BTA 3.9

Power k: 92  
Speed 1/mi: 2800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.95  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2.2...2.6

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 5.7...6.3

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 82.0...83.0  
Dispersion cm<sup>3</sup>/ : 4.0  
1000H.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 55.5...56.5

Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/  
1000H.: 4.0...6.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 48.5...54.5

Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 850  
Charge press. hPa: 1000  
TD travel mm: 0.7...1.5  
mm: (0.4...1.8)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000



TD travel mm: 2.2...2.6  
mm: (1.7...3.1)  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
TD travel mm: 2.8...3.6  
mm: (2.5...3.9)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.2...3.8  
2nd speed 1/min: 850  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.7...5.3  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.7...6.3  
4th speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.3...6.9

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 330  
Del.quantity cm<sup>3</sup>/: 64.5...65.5  
1000H.: (61.0...69.0)  
2nd speed 1/min: 1640  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1560  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...45.0  
1000H.: -  
4th speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 48.5...54.5  
1000H.: (45.5...57.5)  
5th speed 1/min: 1400  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 71.0...74.0  
1000H.: (69.5...75.5)

6th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 77.0...80.0  
1000H.: (75.0...82.0)  
7th speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 82.0...83.0  
1000H.: (79.5...85.5)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 94.0...104.0  
1000H.: -  
9th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 55.5...56.5  
1000H.: (52.0...60.0)

#### Zero delivery (stop):

##### Mech. shutoff:

Speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

##### Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 400  
Del.quantity cm<sup>3</sup>/: 4.0...6.0  
1000H.: (0.0...10.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 230  
Charge press. hPa: -  
ind. 1000H: 80.0

2nd speed 1/min: 400  
Charge press. hPa: -  
max. 1000H : 80.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

#### Mounting and assembly dimensions:

#### Designation

K mm : K-OT  
MS mm : 1.0...1.4  
SVS max. mm : 1.2

Remarks:

Overflow restriction 0.75 mm - Part No.  
..343,..344

\* Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5.9 U40  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1325 R198  
Type number : 0 460 426 063  
Customer Part-No. : 3 908 203

Customer-specific information  
Customer : CDC

Engine : 6 BT 5.9

Power k: 97  
Speed 1/mi: 2650

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 688 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.06)$

Start of delivery block  
Piston stroke mm : 1.5  
mm :  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 850  
Setting value mm: 3.9...4.3

### Supply-pump pressure:

Speed 1/min: 850  
Setting value bar: 3.9...4.5

### Full-load del. w/out charge press.:

Speed 1/min : 1100  
Del.quantity cm<sup>3</sup>/  
1000H.: 56.0...57.0  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

### Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

### Full-load speed regulation:

Speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/  
1000H.: 36.0...42.0

### Start:

Speed 1/min: 100  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 1.3...2.1  
mm: (1.0...2.4)  
2nd speed 1/min: 850  
TD travel mm: 3.9...4.3  
mm: (3.4...4.8)  
3rd speed 1/min: 1100  
TD travel mm: 5.9...6.7  
mm: (5.6...7.0)

### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.5...3.1  
2nd speed 1/min: 850

Supply-pump  
pressure bar: 3.9...4.5  
3rd speed 1/min: 1100  
Supply-pump  
pressure bar: 4.9...5.5

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1325  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1520  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1440  
Del.quantity cm<sup>3</sup>/: 15.0...45.0  
1000H.: -  
3rd speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/: 36.0...42.0  
1000H.: (33.0...45.0)  
4th speed 1/min: 1325  
Del.quantity cm<sup>3</sup>/: 53.5...55.5  
1000H.: (51.0...57.0)  
5th speed 1/min: 1100  
Del.quantity cm<sup>3</sup>/: 56.0...57.0  
1000H.: (53.5...59.5)  
6th speed 1/min: 850  
Del.quantity cm<sup>3</sup>/: 53.5...57.5  
1000H.: (51.5...59.5)  
7th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 38.5...46.5  
1000H.: (36.5...48.5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1325  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450

Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
ind. 1000H.: 65.0

2nd speed 1/min: 250  
max. 1000H.: 65.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5.0...5.4
MS	mm	:	1.3...1.7
SVS max.	mm	:	1.2
XK	mm	:	18.8...20.8
XL	mm	:	9.6...13.0

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5.9 T10  
Edition : 17.01.1990  
replaces : -  
Calibrating oil : IS04113  
  
Injection pump : VE 6/12F1400 R232  
Type number : 0 460 426 077  
Customer Part-No. : 3 908 578

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9 AUTO

Power k: 117  
Speed 1/mi: 2800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 688 901 027

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC): +0.02(0.04)

Start of delivery block  
Piston stroke mm: -  
mm: -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

F20

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value mm: 4.2...4.6

Supply-pump pressure:

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value bar: 4.1...4.7

Full-load del. with charge press.:

Speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 67.0...68.0  
Dispersion cm3/ : 4.0  
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 30.5...31.5

Low-idle speed regulation:

Speed 1/min: 360  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 8.0...14.0  
Dispersion cm3/ : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1530  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 49.0...55.0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm3/1000H.: 45.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500\*  
Charge press. hPa: 1000  
TD travel mm: 0.4...1.2\*  
(0.1...1.5)  
2nd speed 1/min: 900  
Charge press. hPa: 1000

TD travel mm: 4.2...4.6  
mm: (3.7...5.1)  
3rd speed 1/min: 1110  
Charge press. hPa: 1000  
TD travel mm: 5.5...6.3  
mm: (5.2...6.6)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.4...3.0  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.1...4.7  
3rd speed 1/min: 1400  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.1...6.7

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 500  
LDA stroke mm: 6.7  
Del.quantity cm<sup>3</sup>/: 59.0...60.0  
1000H.: (55.5...63.5)  
2nd speed 1/min: 1700  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1620  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: (0.0...40.0)  
4th speed 1/min: 1530  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 49.0...55.0  
1000H.: -  
5th speed 1/min: 1400  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 61.5...64.5  
1000H.: (60.0...66.0)  
6th speed 1/min: 1100  
Charge press. hPa: 1000

Del.quantity cm<sup>3</sup>/: 64.5...67.5  
1000H.: (62.5...69.5)  
7th speed 1/min: 900  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 67.0...68.0  
1000H.: (64.5...70.5)  
8th speed 1/min: 500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 65.5...73.5  
1000H.: -  
9th speed 1/min: 500  
Charge press. hPa: -  
Del.quantity cm<sup>3</sup>/: 30.5...31.5  
1000H.: (27.0...35.0)

#### Zero delivery (stop):

##### Mech. shutoff:

Speed 1/min: 1400  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

##### Electr. shutoff:

Speed 1/min: 360  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

##### Idle delivery:

1st speed 1/min: 360  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...0.4  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 300  
Charge press. hPa: -  
ind. 1000H: 5.0  
2nd speed 1/min: 480  
Charge press. hPa: -  
max. 1000H : 95.0

##### Shutoff electromagnet:

Cut-in  
min. voltage : 20.0  
Rated voltage : 24.0

#### Mounting and assembly dimensions:

##### Designation

K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.1...1.5

XK           mm : 20.2...22.2  
XL           mm : 10.2...13.6

Remarks:

\* Correction at adjusting nut (46)



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W21  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 910 439

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm : 1,4  
mm : +0,02(0,04)

Outlet : 0

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

F23

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm3/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H: 52,5...58,5  
KSB solenoid-operated  
valve volt: 24,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 24,0



Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*  
mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)  
KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)  
KSB solenoid-operated  
valve volt: 24,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7  
KSB solenoid-operated  
valve volt: 24,0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 7,5...8,1  
KSB solenoid-operated  
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 68,0...69,0  
1000H.: (64,5...72,5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -  
5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 52,5...58,5  
1000H.: (49,5...61,5)  
6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 69,0...72,0  
1000H.: (67,5...73,5)  
7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 73,0...74,0  
1000H.: (70,5...76,5)  
8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm<sup>3</sup>/: 72,0...77,0  
 1000H: (70,0...79,0)  
 9th speed 1/min: 500  
 Charge press. hPa: 1200  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: 79,0...91,0  
 1000H: -  
 10th speed 1/min: 500  
 Charge press. hPa: -  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: 51,0...52,0  
 1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
 Del.quantity cm<sup>3</sup>/: 0...3  
 1000H.: -

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del.quantity cm<sup>3</sup>/: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: 5,5...9,5  
 1000H.: (2,5...12,5)  
 2nd speed 1/min: 300  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: 8,5...16,5  
 1000H.: -  
 3rd speed 1/min: 450  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: 0,0...4,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
 KSB solenoid-operated  
 valve volt: 24,0  
 Del.quantity cm<sup>3</sup>/: -  
 ind. 1000H: 60,0

2nd speed 1/min: 250  
 KSB solenoid-operated  
 valve volt: 24,0

Del.quantity cm<sup>3</sup>/: -  
 max. 1000H: 50,0

Shutoff electromagnet:

Cut-in  
 min. voltage : 20,0  
 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation  
 K mm : 3,7  
 KF mm : K-OT  
 MS mm : 0,8...1,2  
 SVS max. mm : 1,4  
 XK mm : 18.8...20.8  
 XL mm : 12.5...15.9  
 \* Correction at adjusting nut (46)  
 emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W18  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 910 769

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm : 1,4  
mm : +0,02(0,04)

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm3/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H: 52,5...58,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)

KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)

KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7

KSB solenoid-operated  
valve volt: 12,0

2nd speed 1/min: 1100  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 6,8...7,4

KSB solenoid-operated  
valve volt: 12,0

3rd speed 1/min: 1250  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 7,5...8,1

KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 68,0...69,0  
1000H.: (64,5...72,5)

2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -

4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -

5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 52,5...58,5  
1000H.: (49,5...61,5)

6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 69,0...72,0  
1000H.: (67,5...73,5)

7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 73,0...74,0  
1000H.: (70,5...76,5)

8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm<sup>3</sup>/: -  
max. 1000H: 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,4
XK	mm	: 18.8...20.8
XL	mm	: 12.5...15.9

\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W19  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 914 888

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm : 1,4  
mm :  $\pm 0,02(0,04)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

G01

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup>/ : 4,0  
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup>/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm<sup>3</sup>/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup>/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 52,5...58,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)

KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)

KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7

KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 6,8...7,4

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 7,5...8,1

KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 68,0...69,0  
1000H.: (64,5...72,5)

2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -

4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -

5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 52,5...58,5  
1000H.: (49,5...61,5)

6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 69,0...72,0  
1000H.: (67,5...73,5)

7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 73,0...74,0  
1000H.: (70,5...76,5)

8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: -  
max. 1000H: 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,4
XK	mm	: 18.8...20.8
XL	mm	: 12.5...15.9

\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U28  
Edition : 17.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 914 889

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1,4  
mm:  $\pm 0,02(0,04)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

G04

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm<sup>3</sup> : 4,0  
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm<sup>3</sup> : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm<sup>3</sup>/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm<sup>3</sup> : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 52,5...58,5  
KSB solenoid-operated  
valve volt: 24,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 24,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*

mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)

KSB solenoid-operated  
valve volt: 24,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)

KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7

KSB solenoid-operated  
valve volt: 24,0

2nd speed 1/min: 1100  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 6,8...7,4

KSB solenoid-operated  
valve volt: 24,0

3rd speed 1/min: 1250  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 7,5...8,1

KSB solenoid-operated  
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 68,0...69,0  
1000H.: (64,5...72,5)

2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -

4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -

5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 52,5...58,5  
1000H.: (49,5...61,5)

6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 69,0...72,0  
1000H.: (67,5...73,5)

7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 73,0...74,0  
1000H.: (70,5...76,5)

8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm3/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm3/: -  
max. 1000H: 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 20,0  
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,4
XK	mm	: 18.8...20.8
XL	mm	: 12.5...15.9

\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W22  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 914 927

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1,4  
mm:  $\pm 0,02(0,04)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm3/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H: 52,5...58,5  
KSB solenoid-operated  
valve volt: 24,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 24,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*  
mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)  
KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)  
KSB solenoid-operated  
valve volt: 24,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7  
KSB solenoid-operated  
valve volt: 24,0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 7,5...8,1  
KSB solenoid-operated  
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 68,0...69,0  
1000H.: (64,5...72,5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 15,0...55,0  
1000H.: -  
5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 52,5...58,5  
1000H.: (49,5...61,5)  
6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 69,0...72,0  
1000H.: (67,5...73,5)  
7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>: 73,0...74,0  
1000H.: (70,5...76,5)  
8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm3/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm3/: -  
max. 1000H : 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 20,0  
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,4
XK	mm	: 18.8...20.8
XL	mm	: 12.5...15.9

\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W24  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 915 255

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1,4  
mm: ±0,02(0,04)

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

G10

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm3/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm3/  
1000H: 52,5...58,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*

mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)

KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)

KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7

KSB solenoid-operated  
valve volt: 12,0

2nd speed 1/min: 1100  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 6,8...7,4

KSB solenoid-operated  
valve volt: 12,0

3rd speed 1/min: 1250  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 7,5...8,1

KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 1250

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Overflow : 55...138

quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700

Charge-air pressure-setting

point hPa: 700

LDA stroke mm: 6,2

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 68,0...69,0

1000H.: (64,5...72,5)

2nd speed 1/min: 1550

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 0,0...3,0

1000H.: -

3rd speed 1/min: 1450

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 0,0...15,0

1000H.: -

4th speed 1/min: 1410

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 15,0...55,0

1000H.: -

5th speed 1/min: 1340

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 52,5...58,5

1000H.: (49,5...61,5)

6th speed 1/min: 1250

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 69,0...72,0

1000H.: (67,5...73,5)

7th speed 1/min: 1100

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 73,0...74,0

1000H.: (70,5...76,5)

8th speed 1/min: 750

Charge press. hPa: 1200

KSB solenoid-operated

valve volt: 12,0



Del.quantity cm3/: 72,0...77,0  
 1000H: (70,0...79,0)  
 9th speed 1/min: 500  
 Charge press. hPa: 1200  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: 79,0...91,0  
 1000H: -  
 10th speed 1/min: 500  
 Charge press. hPa: -  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: 51,0...52,0  
 1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
 Del.quantity cm3/: 0...3  
 1000H.: -

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del.quantity cm3/: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: 5,5...9,5  
 1000H.: (2,5...12,5)  
 2nd speed 1/min: 300  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: 8,5...16,5  
 1000H.: -  
 3rd speed 1/min: 450  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: 0,0...4,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
 KSB solenoid-operated  
 valve volt: 12,0  
 Del.quantity cm3/: -  
 ind. 1000H: 60,0

2nd speed 1/min: 250  
 KSB solenoid-operated  
 valve volt: 12,0

Del.quantity cm3/: -  
 max. 1000H: 50,0

Shutoff electromagnet:

Cut-in  
 min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
 K mm : 3,7  
 KF mm : K-0T  
 MS mm : 0,8...1,2  
 SVS max. mm : 1,4  
 XK mm : 18.8...20.8  
 XL mm : 12.5...15.9  
 \* Correction at adjusting nut (46)  
 emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W20  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 915 525

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1,4  
mm:  $\pm 0,02(0,04)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup> : 4,0  
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup> : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm<sup>3</sup>/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup> : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 52,5...58,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*  
mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)  
KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7  
KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 7,5...8,1  
KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0

Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 68,0...69,0  
1000H.: (64,5...72,5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -  
5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 52,5...58,5  
1000H.: (49,5...61,5)  
6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 69,0...72,0  
1000H.: (67,5...73,5)  
7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 73,0...74,0  
1000H.: (70,5...76,5)  
8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm<sup>3</sup>/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,7  
KF mm : K-OT  
MS mm : 0,8...1,2  
SVS max. mm : 1,4  
XK mm : 18.8...20.8  
XL mm : 12.5...15.9  
\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W23  
Edition : 16.01.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1250 R278  
Type number : 0 460 426 103  
Customer Part-No. : 3 915 526

Customer-specific information  
Customer : CDC

Engine : 6 BT-5.9A

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Start of delivery block  
Piston stroke mm : 1,4  
mm :  $\pm 0,02(0,04)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

Charge press. hPa: 1200  
Setting value mm: 1,3...1,7  
KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Setting value bar: 6,8...7,4  
KSB solenoid-operated  
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H.: 73,0...74,0  
KSB solenoid-operated  
valve volt : 24,0  
Dispersion cm<sup>3</sup>/ : 4,0  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 51,0...52,0  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm<sup>3</sup>/ : 9,0  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350  
Del.quantity cm<sup>3</sup>/  
1000H.: 5,5...9,5  
KSB solenoid-operated  
valve volt: 24,0  
Dispersion cm<sup>3</sup>/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340  
Charge press. hPa: 1200  
Del.quantity cm<sup>3</sup>/  
1000H: 52,5...58,5  
KSB solenoid-operated  
valve volt: 24,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60,0  
KSB solenoid-operated  
valve volt: 24,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450\*  
Charge press. hPa: -  
TD travel mm: 3,0...4,0 \*

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1200  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1100  
Charge press. hPa: 1200  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)

KSB solenoid-operated  
valve volt: 24,0  
4th speed 1/min: 1250  
Charge press. hPa: 1200  
TD travel mm: 2,2...3,0  
mm: (1,9...3,3)

KSB solenoid-operated  
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4,1...4,7

KSB solenoid-operated  
valve volt: 24,0  
2nd speed 1/min: 1100  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 6,8...7,4

KSB solenoid-operated  
valve volt: 24,0  
3rd speed 1/min: 1250  
Charge press. hPa: 1200

Supply-pump  
pressure bar: 7,5...8,1

KSB solenoid-operated  
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0

Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA stroke mm: 6,2  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 68,0...69,0  
1000H.: (64,5...72,5)

2nd speed 1/min: 1550  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 0,0...3,0  
1000H.: -

3rd speed 1/min: 1450  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 0,0...15,0  
1000H.: -

4th speed 1/min: 1410  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 15,0...55,0  
1000H.: -

5th speed 1/min: 1340  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 52,5...58,5  
1000H.: (49,5...61,5)

6th speed 1/min: 1250  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 69,0...72,0  
1000H.: (67,5...73,5)

7th speed 1/min: 1100  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm3/: 73,0...74,0  
1000H.: (70,5...76,5)

8th speed 1/min: 750  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm<sup>3</sup>/: 72,0...77,0  
1000H: (70,0...79,0)  
9th speed 1/min: 500  
Charge press. hPa: 1200  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 79,0...91,0  
1000H: -  
10th speed 1/min: 500  
Charge press. hPa: -  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 51,0...52,0  
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 5,5...9,5  
1000H.: (2,5...12,5)  
2nd speed 1/min: 300  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 8,5...16,5  
1000H.: -  
3rd speed 1/min: 450  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
KSB solenoid-operated  
valve volt: 24,0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 60,0

2nd speed 1/min: 250  
KSB solenoid-operated  
valve volt: 24,0

Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 20,0  
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,4
XK	mm	: 18.8...20.8
XL	mm	: 12.5...15.9

\* Correction at adjusting nut (46)  
emarks:

\* Unscrew KSB ball valve 2 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,0 h  
Edition : 12.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 848 006

Injection pump  
Pump designation : PES8A75D32ORS2286  
Governor  
Governor design. : RQ300/1500AB723DR

Customer-spec. information  
Customer : IHC

Engine : DV 550 B

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 2.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 702

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.95...4.05  
: (-)  
Rack travel in mm : 9.5  
Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-  
Phasing : 270-315  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

G19

1st speed rpm : 1500

Rack travel in mm : 10.0

Del.quantity cm3/ : 6.2...6.5

100 s : (-)

2nd speed rpm : 300

Rack travel in mm : 6.90...7.10

Del.quantity cm3/ : 2.55 \*

100 s : (-)

3rd speed rpm : 300

Rack travel in mm : 6.90...7.10

Del.quantity cm3/ : 0.1...0.45\*\*

100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 19.6...20.4

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del.quantity : 59.0...61.0

1000 : (-)

## RATED SPEED

### 1st version

#### Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 17.80

Speed rpm : 1490...1510

2nd rack travel in: 5.00

Speed rpm : 1635...1665

3rd rack travel in: 7.0...13.7

Speed rpm : 1600

4th rack travel in: 1770

Speed rpm : 0.0...1.0

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 630

Rack travel in mm : -

#### Testing:

Speed rpm : 100

Minimum rack travel: 9.8

Speed rpm : 200

Rack travel in mm : 8.4...11.5

Rack travel in mm : 7.85



Speed rpm : 285...315  
Speed rpm : 400  
Maximum rack trave: 6.2  
Speed rpm : 530  
Rack travel in mm : -

#### TORQUE CONTROL

Dimension a mm : 0.5  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 19.9...20.0  
2nd speed rpm : 900  
Rack travel in m: 19.2...19.5  
3rd speed rpm : 1100  
Rack travel in m: 18.2...18.6

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1000  
Del.quantity cm3/ : 54.0...58.0  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1540

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 81.0...101.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300  
Del.quantity cm3/ : 14.5...18.5  
1000 s: (-)

Remarks:

:

\* = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,0 h 2  
Edition : 13.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 848 008

Injection pump  
Pump designation : PES8A75D320RS2286  
Governor  
Governor design. : RQ300/1500AB725DR

Customer-spec. information  
Customer : IHC

Engine : DV 462 B

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 2.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 702

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.95...4.05  
Rack travel in mm : 8.40  
Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 10.0

Del.quantity cm3/ : 6.20...6.50

100 s : (-)

2nd speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 2.55 \*

100 s : (-)

3rd speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 0.1...0.45\*\*  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 19.6...20.4

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500  
Del.quantity : 49.0...51.0  
1000 : (-)

## RATED SPEED

### 1st version

#### Setting point:

Speed rpm : 650  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 18.45  
Speed rpm : 1490...1510  
2nd rack travel in: 4.60  
Speed rpm : 1655...1685  
3rd rack travel in: 7.6...14.6  
Speed rpm : 1600  
4th rack travel in: 1780  
Speed rpm : 0.0...1.0

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 620  
Rack travel in mm : -

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.7  
Speed rpm : 200  
Rack travel in mm : 8.3...11.4  
Rack travel in mm : 7.65  
Speed rpm : 285...315

Speed rpm : 400  
Maximum rack travel: 6.0  
Speed rpm : 520  
Rack travel in mm : -

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 19.7...20.0  
2nd speed rpm : 1250  
Rack travel in m: 19.0...19.4  
3rd speed rpm : 1350  
Rack travel in m: 18.6...18.9

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 45.0...48.0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1540

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 81.0...104.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300  
Del.quantity cm<sup>3</sup>/ : 14.5...18.5 \*  
1000 s: (-)

#### Remarks:

\* = Cylinders 1,7,6 and 4

\*\* = Cylinders 2,8,3 and 5

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 q  
Edition : 01.02.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 866 154

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100AOC2241  
-R

Governer no. : 0 420 233 256

Customer-spec. information

Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2

Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 305  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 425  
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 110.5...114.5  
1000 s: (108.5...116.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (76.0...82.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3915995

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 j 7  
 Edition : 13.02.1990  
 Replaces : -  
 Test oil : ISO 4113  
 Combination no. : 0 400 874 022  
 Injection pump  
 Pump designation : PES4A80C420LS2054  
 Governor  
 Governor design. : RSV300...1000A2B137D  
 R

Customer-spec. information  
 Customer : CASE

Engine : A-267DF

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 35...45  
 Overflow valve : CASE  
 Inlet press., bar : 1.3  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 9 681 230 706  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9.00  
 Del.quantity cm3/ : 5.55...6.05  
 100 s: (-)  
 2nd speed rpm : 1000  
 Rack travel in mm : 15.0  
 Del.quantity cm3/ : 11.55...12.85  
 100 s: (-)  
 Spread cm3 : 0.4  
 100 s: (-)  
 3rd speed rpm : 200  
 Rack travel in mm : 6.0  
 Del.quantity cm3/ : 1.35...2.25  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del.quantity : 66.0...68.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 9.20  
 Speed rpm : 1005...1025  
 2nd rack travel in: 7.20  
 Speed rpm : 1025...1055  
 3rd rack travel in: 2.80...4.10  
 Speed rpm : 1085...1115  
 4th rack travel in: 1200  
 Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
 position degrees: 20...28  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 5.80

Testing:  
 Speed rpm : 150

Minimum rack trave: 19.0  
Speed rpm : 300  
Rack travel in mm : 5.5...6.1  
Rack travel in mm : 2.90  
Speed rpm : 400  
Speed rpm : 500  
Maximum rack trave: 1.0

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 0.80...1.00  
2nd speed rpm : 400  
Rack travel in m: 1.0...1.3

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm3/ : 76.5...79.5  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : 73.0...76.0  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1000...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 74.0...84.0  
1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1090  
Del.quantity cm3/ : 14.5...22.5  
1000 s: (-)

Remarks:

: CASE # A22636

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 j 1  
Edition : 13.02.1990  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 874 057  
  
Injection pump  
Pump designation : PES4A80C420LS2054  
Governor  
Governor design. : RSV300...1000A2B137D  
R

Customer-spec. information  
Customer : CASE

Engine : A-267DF

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Overflow valve  
: CASE

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Rack travel in mm : 9.0...12.0  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.0

Del.quantity cm<sup>3</sup>/ : 5.55...6.05

100 s : (-)

Spread cm<sup>3</sup> : 0.40

100 s : (-)

2nd speed rpm : 1000

Rack travel in mm : 15.0

Del.quantity cm<sup>3</sup>/ : 11.55...12.85

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (-)

3rd speed rpm : 200

Rack travel in mm : 6.0

Del.quantity cm<sup>3</sup>/ : 1.35...2.25

100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del.quantity : 66.0...68.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 9.20

Speed rpm : 1005...1025

2nd rack travel in: 7.20

Speed rpm : 1025...1055

3rd rack travel in: 2.80...4.10

Speed rpm : 1085...1115

4th rack travel in: 1200

Speed rpm : 0.0...1.00



#### LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.80

#### Testing:

Speed rpm : 150

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.50...6.10

Rack travel in mm : 2.90

Speed rpm : 400

Speed rpm : 500

Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 0.80...1.00

2nd speed rpm : 400

Rack travel in m: 1.00...1.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650

Del.quantity cm3/ : 76.5...79.5

1000 s: (-)

Speed rpm : 500

Del.quantity cm3/ : 73.0...76.0

1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: ?

Speed rpm : 1000...1015

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 74.0...84.0

1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1090

Del.quantity cm3/ : 14.5...22.5

1000 s: (-)

Remarks:

: CASE # A22636

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 1 a 3  
Edition : 13.02.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 874 088  
Injection pump  
Pump designation : PES4A80C420LS2263  
Governor  
Governor design. : RSV375...950A2B518DR

Customer-spec. information  
Customer : CASE

Engine : A-267BD

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Overflow valve  
: CASE

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.5 (0.75)

HO1

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 9.00  
Del.quantity cm<sup>3</sup>/ : 4.15...4.55  
100 s: (-)  
Spread cm<sup>3</sup> : 0.3  
100 s: (-)  
2nd speed rpm : 1000  
Rack travel in mm : 12.00  
Del.quantity cm<sup>3</sup>/ : 6.85...7.65  
100 s: (-)  
Spread cm<sup>3</sup> : 0.30  
100 s: (-)  
3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm<sup>3</sup>/ : 1.35...2.15  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 930  
Del.quantity : 59.0...61.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.00  
Speed rpm : 960...980  
2nd rack travel in: 9.00  
Speed rpm : 985...1015  
3rd rack travel in: 2.40...4.80  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 375

Rack travel in mm : 6.50

Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 0.65  
Speed rpm : 450  
Speed rpm : 630  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 960  
Rack travel in m: -  
2nd speed rpm : 800  
Rack travel in m: 0.30...0.50  
3rd speed rpm : 450  
Rack travel in m: 0.70...1.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm3/ : 66.0...69.0  
1000 s: (-)  
Speed rpm : 550  
Del.quantity cm3/ : <65.0  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 970

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 111.0...117.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1040  
Del.quantity cm3/ : 8.50...18.50  
1000 s: (-)

LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 12.5...16.5  
1000 s: (-)

H02

Remarks:

: CASE # A-5833

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 4,9 a 4  
Edition : 13.2.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 874 107  
Injection pump  
Pump designation : PES4A85C420LS2263  
Governor  
Governor design. : RSV375...1000A2B547D  
R

Customer-spec. information  
Customer : CASE

Engine : A-301 BD

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40

Overflow valve  
: CASE

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00

Del.quantity cm3/ : 4.15...45.5

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 1000  
Rack travel in mm : 12.00  
Del.quantity cm3/ : 1.25...8.05  
100 s: (-)

3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 0.95...1.75  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 69.5...71.5  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 35...43

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1010...1030  
2nd rack travel in: 7.20  
Speed rpm : 1045...1075  
3rd rack travel in: 3.60...4.90  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.30...1.00

## LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 375

Rack travel in mm : 7.50

Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 7.20...7.80  
Rack travel in mm : 4.50  
Speed rpm : 450  
Speed rpm : 600  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: -  
2nd speed rpm : 800  
Rack travel in m: 0.80...1.00  
3rd speed rpm : 400  
Rack travel in m: 1.50...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 85.0...89.0  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : < 87.5  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 124.0...134.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1090  
Del.quantity cm3/ : 9.5...17.5  
1000 s: (-)

LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 15.5...19.5  
1000 s: (-)

H04

Remarks:

: CASE # A60632  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 5.5 e 6  
 Edition : 25.01.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 131  
 Injection pump  
 Pump designation : PES4A85C42DLS2263  
 Governor  
 Governor design. : RSV375...1100A2B554D  
 R

Customer-spec. information  
 Customer : CASE

Engine : A 336 BD

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : CASE

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00

Del.quantity cm<sup>3</sup>/ : 4.1...4.5

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (-)

2nd speed rpm : 1000  
 Rack travel in mm : 12.00  
 Del.quantity cm<sup>3</sup>/ : 7.2...8.0  
 100 s : (-)

3rd speed rpm : 200  
 Rack travel in mm : 6.00  
 Del.quantity cm<sup>3</sup>/ : 0.9...1.7  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 80.5...82.5  
 1000 : (79.5...83.5)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 35...43

Testing:  
 1st rack travel in: 12.20  
 Speed rpm : 1110...1130  
 2nd rack travel in: 7.40  
 Speed rpm : 1145...1175  
 3rd rack travel in: 4.30...5.60  
 Speed rpm : 1185...1215  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.00

LOW IDLE 1  
 Control lever

position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 7.70

#### Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 7.4...8.0  
Rack travel in mm : 4.35  
Speed rpm : 450  
Speed rpm : 580  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: -  
2nd speed rpm : 900  
Rack travel in m: 0.30...0.50  
3rd speed rpm : 500  
Rack travel in m: 0.40...0.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (85.0...90.0)  
Speed rpm : 650  
Del.quantity cm3/ : < 88.0  
1000 s: (< 89.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1140...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 126.0...132.0  
1000 s: (125.0...133.0)

#### HIGH IDLE

##### 1st version

Speed rpm : 1200  
Del.quantity cm3/ : 6.5...14.5  
1000 s: (5.5...15.5)

#### LOW IDLE

H06

Speed rpm : 375  
Del.quantity cm3/ : 18.5...22.5  
1000 s: (17.5...23.5)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 4,9 a  
 Edition : 15.02.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 161  
 Injection pump  
 Pump designation : PES4A85D42DLS2263  
 Governor  
 Governor design. : RSV375...1100A2B579D  
 R

Customer-spec. information  
 Customer : CASE

Engine : A-301 BD

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 35...45

Overflow valve  
 : CASE

Inlet press., bar : 1.3

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.5 (0.75)

H07

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9.00  
 Del.quantity cm<sup>3</sup>/ : 4.1...4.6  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (-)  
 2nd speed rpm : 1000  
 Rack travel in mm : 12.00  
 Del.quantity cm<sup>3</sup>/ : 7.2...8.1  
 100 s : (-)  
 3rd speed rpm : 200  
 Rack travel in mm : 6.00  
 Del.quantity cm<sup>3</sup>/ : 0.9...1.8  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 73.5...75.5  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 11.40  
 Speed rpm : 1110...1130  
 2nd rack travel in: 7.40  
 Speed rpm : 1145...1175  
 3rd rack travel in: 4.50...5.80  
 Speed rpm : 1185...1215  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.00

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 375  
 Rack travel in mm : 7.20



Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 6.90...7.50  
Rack travel in mm : 4.40  
Speed rpm : 450  
Speed rpm : 600  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 0.30...0.50  
2nd speed rpm : 500  
Rack travel in m: 0.40...0.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 76.5...79.5  
1000 s: (-)  
Speed rpm : 650  
Del.quantity cm3/ : < 78.0  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 124.0...134.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200  
Del.quantity cm3/ : 6.5...14.5  
1000 s: (-)

LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 15.5...19.5  
1000 s: (-)

Remarks:

: CASE # A 62453

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 5,5 e  
Edition : 13.02.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 874 163  
Injection pump  
Pump designation : PES4A85D420LS2263  
Governor  
Governor design. : RSV375...1000A2B519D  
R

Customer-spec. information  
Customer : CASE

Engine : A-336 BD

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Overflow valve : CASE

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Rack travel in mm : 10.50  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00

Del.quantity cm<sup>3</sup>/ : 4.15...4.55

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (-)

2nd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm<sup>3</sup>/ : 0.95...1.75  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 90.5...92.5  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1010...1030  
2nd rack travel in: 9.00  
Speed rpm : 1045...1075  
3rd rack travel in: 3.80...4.40  
Speed rpm : 1005...1035  
4th rack travel in: 1220  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 7.80

Testing:

Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 7.50...8.10  
Rack travel in mm : 4.85  
Speed rpm : 450  
Speed rpm : 600  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 0.50...0.70  
2nd speed rpm : 500  
Rack travel in m: 0.60...0.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 100.5...104.5  
1000 s: (-)  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : < 101.5  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: ?  
Speed rpm : 1040

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 124.0...134.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 11.5...19.5  
1000 s: (-)

LOW IDLE

Speed rpm : 375  
Del.quantity cm<sup>3</sup>/ : 18.5...22.5  
1000 s: (-)

Remarks:

: CASE # A62569

H10

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8.3 j 4  
 Edition : 13.02.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 007  
 Injection pump  
 Pump designation : PES6A80C420LS2054  
 Governor  
 Governor design. : RSV300...800A5B135DR

Customer-spec. information  
 Customer : CASE

Engine : A 401 D

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 35...45

Overflow valve  
 : CASE

Inlet press., bar : 1.3

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00

Del.quantity cm<sup>3</sup>/ : 5.55...6.05

100 s : (-)

Spread cm<sup>3</sup> : 0.4

100 s : (-)

2nd speed rpm : 1000  
 Rack travel in mm : 15.00  
 Del.quantity cm<sup>3</sup>/ : 11.55...12.85  
 100 s : (-)  
 3rd speed rpm : 200  
 Rack travel in mm : 6.00  
 Del.quantity cm<sup>3</sup>/ : 1.35...2.25  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 780  
 Del.quantity : 66.5...68.5  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:  
 1st rack travel in: 16.00  
 Speed rpm : 810...830  
 2nd rack travel in: 12.60  
 Speed rpm : 855...885  
 3rd rack travel in: 6.40  
 Speed rpm : 925...955

## LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.50

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 400  
Speed rpm : 500  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700  
Rack travel in m: 0.20...0.50  
2nd speed rpm : 600  
Rack travel in m: 0.60...0.90  
3rd speed rpm : 400  
Rack travel in m: 0.80...1.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 71.5...74.5  
1000 s: (-)  
Speed rpm : 450  
Del.quantity cm3/ : 70.5...75.0  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 800...815

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...89.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 880  
Del.quantity cm3/ : 11.0...19.0  
1000 s: (-)

Remarks:

: CASE # A22637

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control

spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 j 8  
 Edition : 14.02.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 022  
 Injection pump  
 Pump designation : PES6A85C420LS2054  
 Governor  
 Governor design. : RSV300...900A2B137DR

Customer-spec. information  
 Customer : CASE

Engine : A-401

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : WS 187P (CASE)

Inlet press., bar : 1.25

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

H13

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm3/ : 5,65...6,02  
 100 s : (-)  
 2nd speed rpm : 1000  
 Rack travel in mm : 15,00  
 Del.quantity cm3/ : 11,55...12,85  
 100 s : (-)  
 3rd speed rpm : 200  
 Rack travel in mm : 6,00  
 Del.quantity cm3/ : 1,35...2,25  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 880  
 Del.quantity : 79,8...81,8  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 35...43

LOW IDLE 1  
 Control lever  
 position degrees: 16...24  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 6,50  
 Speed rpm : 300  
 Rack travel in mm : 6.40...6.60

## TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 900  
 Rack travel in m: 9,00  
 2nd speed rpm : 700  
 Rack travel in m: 9,20...9,50  
 3rd speed rpm : 600  
 Rack travel in m: 9,60...9,90  
 4th speed rpm : 450

Rack travel in m: 9,70...10,00

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 78,5...81,5  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 900...915

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 77,0...86,0  
1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 985  
Del.quantity cm<sup>3</sup>/ : 10,0...18,0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8.3 j 3  
Edition : 13.02.1990  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 036  
  
Injection pump  
Pump designation : PES6A80C420LS2054  
Governor  
Governor design. : RSV300...900A2B185DR

Customer-spec. information  
Customer : CASE

Engine : A 267 D

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Overflow valve  
: CASE

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 5.55...6.05  
100 s: (-)  
Spread cm3 : 0.4  
100 s: (-)  
  
2nd speed rpm : 1000  
Rack travel in mm : 15.00  
Del.quantity cm3/ : 11.55...12.85  
100 s: (-)  
3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 1.35...2.25  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 880  
Del.quantity : 63.5...65.5  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

Testing:  
1st rack travel in: 9.40  
Speed rpm : 905...925  
2nd rack travel in: 7.20  
Speed rpm : 935...965  
3rd rack travel in: 3.40...4.60  
Speed rpm : 985...1015  
4th rack travel in: 1050  
Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 300



Rack travel in mm : 5.50

spring retainer.

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.20...5.60  
Rack travel in mm : 2.75  
Speed rpm : 400  
Speed rpm : 500  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 600  
Rack travel in m: 0.50...0.80  
2nd speed rpm : 400  
Rack travel in m: 0.60...0.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 68.5...71.5  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 900...915

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 77.0...86.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 990  
Del.quantity cm3/ : 10.0...18.0  
1000 s: (-)

Remarks:

: CASE # A34007

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 o  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113

Injection pump  
Pump designation : PES6A90D420LS2354  
Governor  
Governor design. : RSV375...1050A2B710D  
R

Customer-spec. information  
Customer : CASE

Engine : A-504 BDT

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.3

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
(2.10...2.30)  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00

Del.quantity cm3/ : 4.8...5.1

100 s : (-)

Spread cm3 : 0.5

100 s : (-)

2nd speed rpm : 1000  
Rack travel in mm : 12.00  
Del.quantity cm3/ : 8.6...9.4  
100 s : (-)

3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 0.72...1.33

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 91.0...93.0  
1000 : (-)

## RATED SPEED

1st version  
Control Lever  
position degrees: 36...44

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1060...1080  
2nd rack travel in: 8.70  
Speed rpm : 1085...1115  
3rd rack travel in: 4.50...6.20  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.30...1.00

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 7.80

Testing:  
Speed rpm : 150  
Minimum rack trave: 19.00  
Speed rpm : 375  
Rack travel in mm : 7.50...8.10  
Rack travel in mm : 4.35

Speed rpm : 450  
Speed rpm : 580  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: -

2nd speed rpm : 500

Rack travel in m: 0.10...0.40

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 91.0...95.0

1000 s: (-)

Speed rpm : 650

Del.quantity cm3/ : < 94.0

1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?

Speed rpm : 1090...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 134.0...144.0

1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 1150

Del.quantity cm3/ : 14.0...18.0

1000 s: (-)

#### LOW IDLE

Speed rpm : 375

Del.quantity cm3/ : 18.0...22.5

1000 s: (-)

Remarks:

: CASE # A66215

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 d 1  
Edition : 25.01.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 276 050  
Injection pump  
Pump designation : PES6A100D410RS3036  
Governor  
Governor design. : RSV600...1000A2B2082  
L

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466A

1st version kW : 125  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Test oil  
Outlet temp, °C : -

Overflow valve  
: 1 413 385 007

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1.95...2.05  
: (1.90...2.10)

Rack travel in mm : 10.5  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.8

Del.quantity cm3/ : 10.8...11.1

100 s: (-)

Spread cm3 : 0.3

100 s: (-)

2nd speed rpm : 400  
Rack travel in mm : 6.6  
Del.quantity cm3/ : 1.3...1.7  
100 s: (-)  
Spread cm3 : 0.3  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.3...1.0

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 800  
Del.quantity : 108.0...111.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 9.8  
Speed rpm : 1145...1155  
2nd rack travel in: 4.0  
Speed rpm : 1205...1235  
4th rack travel in: 1300

Speed rpm : 0.3...1.7

#### LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.0

Speed rpm : 400

Rack travel in mm : 6.6

Rack travel in mm : 2.0

Speed rpm : 480...540

Speed rpm : 850

Maximum rack trave: 1.0

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.75...10.85

2nd speed rpm : 650

Rack travel in m: 11.75...12.05

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 270

Rack travel mm : 11.75...11.85

#### Measurement

Speed 1/min : 500

1st pressure hPa : 170

Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 800

Speed rpm : 650

Del.quantity cm3/ : 115.5...118.5

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 77.5...80.5

1000 s: (-)

#### BREAKAWAY

##### 1st version

H2O

1mm rack travel less than

full load rack tr: 9.8

Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...195.0

1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1200

Del.quantity cm3/ : 27.0...37.0

1000 s: (-)

#### LOW IDLE

Speed rpm : 400

Del.quantity cm3/ : 13.0...17.0

1000 s: (-)

#### Remarks:

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ALO 13,8 j  
 Edition : 16.02.1990  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 347

Injection pump  
 Pump designation : PE6P120A420LS316  
 Governor  
 Governor design. : RQV300...1050PA312KR

Customer-spec. information  
 Customer : ALLIS CHALMERS

Engine : 25 000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.8...2.9  
 : (2.75...2.95)  
 Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 12.00

Del.quantity cm3/ : 26.7...27.3

---

100 s : (-)

Spread cm3 : 1.2

---

100 s : (-)

2nd speed rpm : 600  
 Rack travel in mm : 15.00  
 Del.quantity cm3/ : 32.8...35.3  
 100 s : (-)

3rd speed rpm : 200  
 Rack travel in mm : 6.00  
 Del.quantity cm3/ : 3.5...4.5  
 100 s : (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
 travel mm : 1.8...2.7

2nd speed rpm : 550  
 travel mm : 3.8...4.2

3rd speed rpm : 1000  
 travel mm : 7.5...7.9

4th speed rpm : 1245  
 travel mm : 10.9...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 256.0...258.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 62...70

Testing:  
 1st rack travel in: 16.50  
 Speed rpm : 1040...1060

2nd rack travel in: 12.85  
 Speed rpm : 1085...1115

3rd rack travel in: 6.00...11.60  
 Speed rpm : 1150

4th rack travel in: 1210  
 Speed rpm : 0.00...7.00

5th rack travel in: 1300  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 6...14

Testing:

Speed rpm : 250  
Minimum rack trave: 6.40  
Speed rpm : 350  
Rack travel in mm : 3.00...5.20  
Rack travel in mm : 2.05  
Speed rpm : 435...465  
Speed rpm : 550  
Maximum rack trave: 1.00

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 480  
Rack travel mm : -0.10...-0.30

Measurement

Speed 1/min : 500

1st pressure hPa : 330  
Rack travel in m: -4.15...-4.55

START CUT-OUT

Speed 1/min : 150...250

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 238.0...244.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 171.0...179.0  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (-)

LOW IDLE

H22

Speed rpm : 300  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 8,0 p  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 351

Injection pump  
Pump designation : PE6P100A720RS332  
Governor  
Governor design. : RQV200...1200PA168R

Customer-spec. information  
Customer : SCANIA

Engine : DS 8

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.5...2.6  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.10

Del.quantity cm3/ : 13.4...13.8

100 s : (-)

Spread cm3 : 0.5

100 s : (-)

2nd speed rpm : 225  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 1.0...1.2  
100 s : (-)  
Spread cm3 : 0.15  
100 s : (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h : 260  
Del.quantity : 134.0...138.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 16.30  
Speed rpm : 1190...1210  
2nd rack travel in: 10.95  
Speed rpm : 1285...1315  
3rd rack travel in: 1.40...8.10  
Speed rpm : 1385...1415  
4th rack travel in: 1550  
Speed rpm : -

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.20  
Speed rpm : 300  
Rack travel in mm : 3.70...5.90  
Rack travel in mm : 2.85  
Speed rpm : 400  
Speed rpm : 500  
Maximum rack trave: 1.00

Aneroid/Altitude  
Compensator Test

1st version



Setting  
Speed rpm : 500  
Pressure hPa : 260  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190...240  
1000 s: (-)

#### LOW IDLE

Speed rpm : 225  
Del.quantity cm3/ : 11.0...13.0  
1000 s: (-)

Remarks:  
: MACK ENDT 475

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : WAU 1 a  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 876 043  
Injection pump  
Pump designation : PE6P130/420LS67  
Governor  
Governor design. : RSV300..900P4/308DR

Customer-spec. information  
Customer : WAUKESHA

Engine : F-1197D

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 026

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.0...2.1  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 9.00

Del.quantity cm<sup>3</sup>/ : 20.7...21.4

100 s : (-)

Spread cm<sup>3</sup> : 0.8

100 s : (-)

2nd speed rpm : 600  
Rack travel in mm : 12.00  
Del.quantity cm<sup>3</sup>/ : 28.2...28.9  
100 s : (-)

3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm<sup>3</sup>/ : 4.6...6.0  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 225.0...229.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 16.00

Speed rpm : 890...910

2nd rack travel in: 11.00

Speed rpm : 925...955

3rd rack travel in: 3.00...5.00

Speed rpm : 985...1015

4th rack travel in: 1100

Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.00

Testing:

Speed rpm : 100

Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30  
Rack travel in mm : 3.70  
Speed rpm : 400  
Speed rpm : 580  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880  
Rack travel in m: -  
2nd speed rpm : 600  
Rack travel in m: -  
3rd speed rpm : 500  
Rack travel in m: 0.10...0.30  
4th speed rpm : 360  
Rack travel in m: 0.40...0.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 234.0...240.0  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 589.0...591.0  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 970  
Del.quantity cm3/ : 28.0...38.0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : WAU 1 a 2  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 045

Injection pump  
Pump designation : PE6P130/420LS67  
Governor  
Governor design. : RSV300..900P4/308DR

Customer-spec. information  
Customer : WAUKESHA

Engine : F-1197D

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 026

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.0...2.1  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 9.00

Del.quantity cm3/ : 20.7...21.4

100 s : (-)

Spread cm3 : 0.8

100 s : (-)

2nd speed rpm : 600  
Rack travel in mm : 12.00  
Del.quantity cm3/ : 28.2...28.9  
100 s : (-)

3rd speed rpm : 200  
Rack travel in mm : 6.00  
Del.quantity cm3/ : 4.6...6.0  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del.quantity : 225.0...229.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 16.00  
Speed rpm : 890...910  
2nd rack travel in: 11.00  
Speed rpm : 925...955  
3rd rack travel in: 3.00...5.00  
Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100

Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30  
Rack travel in mm : 3.70  
Speed rpm : 400  
Speed rpm : 580  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880  
Rack travel in m: -  
2nd speed rpm : 600  
Rack travel in m: -  
3rd speed rpm : 500  
Rack travel in m: 0.10...0.30  
4th speed rpm : 360  
Rack travel in m: 0.40...0.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 234.0...240.0  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 226.0...232.0  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?  
Speed rpm : 920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 589.0...591.0  
1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 970  
Del.quantity cm<sup>3</sup>/ : 28.0...38.0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : WAU 1 a 2  
 Edition : 14.02.1990  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 098

Injection pump  
 Pump designation : PE6P130A420LS67  
 Governor  
 Governor design. : RSV300...900P4/308DR

Customer-spec. information  
 Customer : WAUKESHA

Engine : F-1197 D

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 026

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.0...2.1  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 9.00

Del.quantity cm<sup>3</sup>/ : 20.7...21.4

100 s : (-)

Spread cm<sup>3</sup> : 0.8

100 s : (-)

2nd speed rpm : 600  
 Rack travel in mm : 12.00  
 Del.quantity cm<sup>3</sup>/ : 28.3...30.1  
 100 s : (-)

3rd speed rpm : 200  
 Rack travel in mm : 6.00  
 Del.quantity cm<sup>3</sup>/ : 4.6...6.3  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 225.0...229.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:  
 1st rack travel in: 16.00  
 Speed rpm : 890...910  
 2nd rack travel in: 11.00  
 Speed rpm : 925...955  
 3rd rack travel in: 3.00...5.00  
 Speed rpm : 985...1015  
 4th rack travel in: 1100  
 Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
 position degrees: 20...28  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 6.00

Testing:  
 Speed rpm : 100

Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30  
Rack travel in mm : 3.70  
Speed rpm : 400  
Speed rpm : 360  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880  
Rack travel in m: -  
2nd speed rpm : 600  
Rack travel in m: -  
3rd speed rpm : 500  
Rack travel in m: 0.10...0.30  
4th speed rpm : 360  
Rack travel in m: 0.40...0.60

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 234.0...240.0  
1000 s: (-)  
Speed rpm : 500  
Del.quantity cm3/ : 226.0...232.0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 589.0...591.0  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 970  
Del.quantity cm3/ : 28.0...38.0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q 4  
 Edition : 2.1.90  
 Replaces : 5.8.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 740  
 Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-  
 4  
 Governor no. : 0 421 833 179

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.6

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version



Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 10.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve — 1st version

1st speed rpm : 1180  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 975  
Rack travel in m: 11.40...11.60  
3rd speed rpm : 600  
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

Test specifications apply to  
injection-pump assemblies on engines  
up to end number 421...123 021  
APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q 8  
 Edition : 2.1.90  
 Replaces : 18.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 740A  
 Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-4  
 Governor no. : 0 421 833 179

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.5

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.40  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 975  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 600  
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm3/ : 164.0...168.0  
1000 s: (161.0...171.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

Test specifications apply to  
injection-pump assemblies on engines  
up to end number 421...123 021  
APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q 9  
Edition : 2.1.90  
Replaces : 18.12.87  
Test oil : ISO-4113

Combination no. : 0 401 876 740B

Injection pump  
Pump designation : PE6P120A320LS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-4  
Governor no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 15.7...15.9

100 s: (15.4...16.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.5

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 157.0...159.0

1000 : (154.0...162.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.70  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 950  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 1075  
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 168.0...172.0  
1000 s: (165.0...175.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

Test specifications apply to injection-pump assemblies on engines as of end number 421...123 022  
APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q10  
 Edition : 2.1.90  
 Replaces : 18.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 740C  
 Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-4  
 Governor no. : 0 421 833 179

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.5

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.10  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 950  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 1075  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

Test specifications apply to injection-pump assemblies on engines as of end number 421...123 022  
APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q 7  
Edition : 2.1.90  
Replaces : 11.12.87  
Test oil : ISO-4113

Combination no. : 0 401 876 753

Injection pump  
Pump designation : PE6P120A320LS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-  
6  
Governor no. : 0 421 833 227

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300  
2nd version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness : 6.00x1.50x1000  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 15.7...15.9

100 s: (15.4...16.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 750.0  
Rack travel in mm : 3.4...3.6  
Del.quantity cm<sup>3</sup>/ : 1.8...2.4  
100 s: (1.5...2.7)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del.quantity : 157.0...159.0  
1000 : (154.0...162.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)  
2nd version



Speed rpm : 1180  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 950  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 1075  
Rack travel in m: 11.00...11.20

#### START CUT-OUT

Speed 1/min : 5 (0)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del.quantity cm3/ : 168.0...172.0  
1000 s: (165.0...175.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

##### 2nd version

Speed rpm : 975

Del.quantity cm3/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm3 : 9.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### Remarks:

:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

Test specifications apply to  
injection-pump assemblies on engines  
as of end number 421...123 022  
APPLICATION

Version 1 = Combine harvester  
Version 2 = Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q11  
 Edition : 2.1.90  
 Replaces : 18.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 753A  
 Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-  
 6  
 Governor no. : 0 421 833 227

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.10  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 950  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 1075  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

Test specifications apply to  
injection-pump assemblies on engines  
as of end number 421...123 022  
APPLICATION

Forage harvester

## Note remarks

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 10.20  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 950  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 1075  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

Test specifications apply to injection-pump assemblies on engines up to end number 421...123 021  
APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 q13  
 Edition : 2.1.90  
 Replaces : 18.12.87  
 Test oil : ISO-4113

Combination no. : 0 401 876 753C

Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-6  
 Governor no. : 0 421 833 227

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.40  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 950  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 1075  
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 164.0...168.0  
1000 s: (161.0...171.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

Test specifications apply to injection-pump assemblies on engines up to end number 421...123 021  
APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,4 a 5  
 Edition : 26.01.1990  
 Replaces : -  
 Test oil : ISO 4113  
 Combination no. : 0 402 058 044  
 Injection pump  
 Pump designation : PES8P100A921/5RS286  
 Governor  
 Governor design. : RQV300...1300PA444KR

Customer-spec. information  
 Customer : IHC

Engine : DVT 800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 35...45

Overflow valve : 1 417 413 040

Inlet press., bar : 2.75

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 204...207

Test lines : 9 681 230 713

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X2.12X1016

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.8...2.9  
 : (-)  
 Rack travel in mm : 10.5  
 Firing order : 1-8-4-2-7-3-6-5

Phasing : 45-90-135-180-225-

Tolerance + - ° : 270-315  
 : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.2

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (-)

2nd speed rpm : 300

Rack travel in mm : 5.0

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1320

Rack travel in mm : 15.0...17.5

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1300

Aneroid pressure h: 800

Del.quantity : 114.0...116.0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 59.5...63.5

### Testing:

1st rack travel in: 9.2

Speed rpm : 1340...1350

2nd rack travel in: 4.0

Speed rpm : 1420...1450

3rd rack travel in: 0.0...1.0

Speed rpm : 1640

## LOW IDLE 1

Control lever

position degrees: 8.5...13.5

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.1



Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 425...485

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.15...10.25  
2nd speed rpm : 900  
Rack travel in m: 10.45...10.55  
3rd speed rpm : 700  
Rack travel in m: 10.05...10.15

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 800  
Pressure hPa : 215  
Rack travel mm : \*

Measurement

Speed 1/min : 800

1st pressure hPa : 395

Rack travel in m: \*\*

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 900

Del.quantity cm3/ : 118.0...120.0  
1000 s: (-)

Aneroid pressure h: -

Speed rpm : 800

Del.quantity cm3/ : 84.0...88.0  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.2

Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 184.0...224.0  
1000 s: (-)

#### HIGH IDLE

J20

1st version

Aneroid pressure h: -

Speed rpm : -

Del.quantity cm3/ : -  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 17.0...21.0

Remarks:

Perform pump setting only with IH hose  
with 1.57 mm diameter restriction.

\* Start of LDA (manifold-pressure  
compensator) movement

\*\* Ende der LDA-Bewegung

Start-of-delivery mark is made at  
start of delivery of cylinder 1 with  
idle control-rod travel

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 k 1  
Edition : 14.02.1990  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 076 007

Injection pump  
Pump designation : PES6P100A72ORS1010  
Governor  
Governor design. : RSV400...900P7/379R

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6531 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 35...45

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.4...2.5  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00

Del.quantity cm3/ : 12.8...13.4

100 s : (-)

Spread cm3 : 0.5

100 s : (-)

2nd speed rpm : 600  
Rack travel in mm : 15.00  
Del.quantity cm3/ : 17.6...19.0  
100 s : (-)

3rd speed rpm : 200  
Rack travel in mm : 9.00  
Del.quantity cm3/ : 4.2...5.2

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 890  
Del.quantity : 142.0...144.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 16.00  
Speed rpm : 890...910  
2nd rack travel in: 11.80  
Speed rpm : 915...945  
3rd rack travel in: 5.60  
Speed rpm : 925...955  
4th rack travel in: 1050  
Speed rpm : 0.0...1.00

## LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 7.10

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.80...7.40  
Rack travel in mm : 2.75

Speed rpm : 500  
Speed rpm : 630  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880

Rack travel in m: -

2nd speed rpm : 430

Rack travel in m: 0.60...1.20

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?

Speed rpm : 910...915

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150...190

1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 940

Del.quantity cm3/ : 16.0...25.0

1000 s: (-)

#### LOW IDLE

Speed rpm : 400

Del.quantity cm3/ : 20.0...27.0

1000 s: (-)

Remarks:

: JOHN DEERE # AR64215

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 L 3  
 Edition : 26.01.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 031  
 Injection pump  
 Pump designation : PES6P110A72ORS305  
 Governor  
 Governor design. : RSV400...1050P7/420D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.78...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4-

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 11.7

Del.quantity cm3/ : 15.7...15.9

100 s : (-)

Spread cm3 : 0.4

100 s : (-)

2nd speed rpm : 400  
 Rack travel in mm : 6.0  
 Del.quantity cm3/ : 1.9...2.5

100 s : (-)

Spread cm3 : 0.4  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1040

Del.quantity : 157.0...159.0

1000 : (155.0...161.0)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 11.7

Speed rpm : 1030

2nd rack travel in: 10.7

Speed rpm : 1070

3rd rack travel in: 4.0...6.0

Speed rpm : 1110

## LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack trave: 19.0  
Speed rpm : 400  
Rack travel in mm : 6.3  
Rack travel in mm : 2.0  
Speed rpm : 450...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 0.6

START CUT-OUT

Speed 1/min : 350...450

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 169.0...173.0  
1000 s: (167.0...175.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.7  
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 17.0...27.0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (-)

Remarks:

: JOHN DEERE # AR79943  
Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10.1 d6  
Edition : 26.01.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 042  
Injection pump  
Pump designation : PES6P110A720RS296  
Governor  
Governor design. : RSV400...1050P7/438D  
R

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00X1,50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 9.0...12.0  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040  
Rack travel in mm : 11.0  
Del.quantity cm3/ : 14.7...14.9  
100 s: (-)  
Spread cm3 : 0.4  
100 s: (-)  
2nd speed rpm : 400  
Rack travel in mm : 6.1  
Del.quantity cm3/ : 1.9...2.5  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1040  
Del.quantity : 147.0...149.0  
1000 : (145.0...151.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 10.0  
Speed rpm : 1060...1080  
2nd rack travel in: 4.1  
Speed rpm : 1085...1115

## LOW IDLE 1

Control lever  
position degrees: 24...32

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.0  
Speed rpm : 370  
Rack travel in mm : 9.9...10.1  
Rack travel in mm : 6.1  
Speed rpm : 400

Speed rpm : 440  
Maximum rack trave: 2.0

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 450  
Rack travel in m: 11.7...12.3

#### START CUT-OUT

Speed 1/min : 400...750

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1040  
Del.quantity cm3/ : 147.0...149.0  
1000 s: (145.0...151.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.0  
Speed rpm : 1060...1080

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 1100  
Del.quantity cm3/ : 17.0...27.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (-)

Remarks:

: JOHN DEERE # AR81969

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 16,0 c1  
Edition : 16.02.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 877

Injection pump  
Pump designation : PE6P130A72ORS7122-1  
EP type number : 0 412 636 812  
Governor  
Governor design. : RQV225...930PA922  
Governor no. : 0 421 813 763

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD162 FL,FJ,

1st version kW : 331.0  
Rated speed : 1860

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 30.0...30.3

100 s: (29.7...30.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 2.5...3.0  
100 s: (2.3...3.3)  
Spread cm3 : 0.5  
100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 350  
travel mm : 2.10...2.70  
3rd speed rpm : 700  
travel mm : 5.60...6.20  
4th speed rpm : 975  
travel mm : 8.20...8.40  
5th speed rpm : 1090  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 7.70...10.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 700



Del.quantity : 300.5...303.5  
1000 : (297.0...307.0)  
Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 970...980  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.50...13.60

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 720  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (176.5...183.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 970...980

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)  
Rack travel in mm : 9.50...9.70

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 25.5...30.5  
1000 s: (23.0...33.0)  
Spread cm3 : 5.00  
1000 s: (8.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 f  
Edition : 02.02.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 882  
Injection pump  
Pump designation : PES6P120A320RS7156-1  
EP type number : 0 412 726 830  
Governor  
Governor design. : RQV300...1050PA941  
Governor no. : 0 421 813 834

Customer-spec. information  
Customer : PERKINS

Engine : 2006 TW-H

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00

K01

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : ?

100 s : (?)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : ?

100 s : (?)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.50

2nd speed rpm : 370  
travel mm : 3.30...3.90

3rd speed rpm : 700  
travel mm : 4.70...5.30

4th speed rpm : 1110  
travel mm : 5.40...5.60

5th speed rpm : 1250  
travel mm : 8.60...9.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : ?

1000 : (?)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:

Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 300...380

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 600

Rack travel in m: 13.00...13.10

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Full-load delivery not known. Set  
according to engine test report.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 17  
 Edition : 12.02.90  
 Replaces : 30.09.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 150  
 Injection pump  
 Pump designation : PES6MW100/720RS1120  
 EP type number : 0 413 406 112  
 Governor  
 Governor design. : RQV300...1300MW59  
 Governor no. : 0 420 083 077

Customer-spec. information  
 Customer : DB

Engine : OM366LA

1st version kW : 141.7  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

K03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.2

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.20

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : -  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 280  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 73.0...76.0  
1000 s: (70.5...78.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 47.0...49.0  
1000 s: (45.0...51.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 47  
Edition : 12.02.90  
Replaces : 13.06.88  
Test oil : ISO-4113

Combination no. : 0 403 446 156

Injection pump  
Pump designation : PES6MW100/720RS1120  
EP type number : 0 413 406 112  
Governor  
Governor design. : RQV300...1300MW59  
Governor no. : 0 420 083 077

Customer-spec. information  
Customer : DB

Engine : OM366LA

1st version kW : 141.7  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

K05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1470  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 700  
Rack travel in m: 12.10...12.20  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 280  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 73.0...76.0  
1000 s: (70.5...78.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 47.0...49.0  
1000 s: (45.0...51.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB vorl.  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 191  
Injection pump  
Pump designation : PES6MW100/720RS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1200MW48-5  
Governor no. : 0 420 083 140

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM366A

1st version kW : 116.0  
Rated speed : 2400  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.9...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 7.30...7.50

2nd speed rpm : 1380  
travel mm : 8.50...8.90

3rd speed rpm : 500  
travel mm : 2.70...3.30

4th speed rpm : 300  
travel mm : 1.20...1.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.80  
Speed rpm : 300  
Rack travel in mm : 8.00...8.10

CONSTANT REGULATION  
Speed rpm : 330...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 700  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 800  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm3/ : 62.0...64.0  
1000 s: (60.0...66.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.10  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (9.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 82  
Edition : 05.03.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 446 225  
  
Injection pump  
Pump designation : PES6MW100/72ORS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1400MW48-11  
Governor no. : 0 420 083 190

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366A

1st version kw : 125.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

K09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
travel mm : 9.20...9.60

2nd speed rpm : 1450  
travel mm : 8.30...8.50

3rd speed rpm : 550  
travel mm : 2.80...3.40

4th speed rpm : 300  
travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del.quantity : 75.0...77.0  
1000 : (73.0...79.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 71  
 Edition : 16.02.90  
 Replaces : 13.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 226  
 Injection pump  
 Pump designation : PES6MW100/72ORS1131-  
 1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RQ300/1300MW105  
 Governor no. : 0 420 082 039

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1360

travel mm : 7.20...7.40

3rd speed rpm : 550

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control Lever  
position degrees: 38...46

Setting point:  
Speed rpm : 1200  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 13.60  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.60...10.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 500  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1000  
Rack travel in m: 14.60...14.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750

K12

Del.quantity cm3/ : 111.0...115.0  
1000 s: (109.0...117.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 81  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 231  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1400MW48-8  
 Governor no. : 0 420 083 175

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400  
 Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7  
 100 s: (7.3...7.9)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.8...8.3  
 Del.quantity cm3/ : 0.9...1.3  
 100 s: (0.6...1.5)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
 travel mm : 9.20...9.60  
 2nd speed rpm : 1450  
 travel mm : 8.30...8.50  
 3rd speed rpm : 550  
 travel mm : 2.80...3.40  
 4th speed rpm : 300  
 travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1470  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 75.0...77.0  
 1000 : (73.0...79.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL  
Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.80...12.10  
4th speed rpm : 1200  
Rack travel in m: 11.00...11.30

#### START CUT-OUT

Speed 1/min : 200 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 80  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 232  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1400MW48-11  
 Governor no. : 0 420 083 190

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

K15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version



Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 4  
Edition : 01.02.90  
Replaces : 18.08.89  
Test oil : ISO-4113

Combination no. : 0 403 446 233

Injection pump  
Pump designation : PES6MW100/320RS1171  
EP type number : 0 413 406 156  
Governor  
Governor design. : RQV300...1400MW97-1  
Governor no. : 0 420 083 195

Customer-spec. information  
Customer : RVI

Engine : MIDS060212C

1st version kw : 97.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

K17

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 62...70

Testing:

1st rack travel in: 8.50  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1540...1570  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 3.9

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm3/ : 66.5...69.5  
1000 s: (64.0...72.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.50  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 3  
 Edition : 01.02.90  
 Replaces : 18.08.89  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 235  
 Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1300MW80-5  
 Governor no. : 0 420 083 197

Customer-spec. information  
 Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

K19

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.60

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380  
2nd rack travel in: 4.00  
Speed rpm : 1485...1515  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.80...8.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 200  
Rack travel in m: 10.20...10.50  
3rd pressure hPa : 700  
Rack travel in m: 10.80...10.90

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 81.0...84.0  
1000 s: (78.5...86.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 43.0...45.0  
1000 s: (41.0...47.0)

#### BREAKAWAY

K20

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 83  
Edition : 16.02.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 446 246  
  
Injection pump  
Pump designation : PES6MW100/72ORS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1300MW50-6  
Governor no. : 0 420 083 209

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1430

travel mm : 9.30...9.70

2nd speed rpm : 1340

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 800

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.20  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 585  
Rack travel in m: 12.20...12.30  
4th speed rpm : 1100  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : 180  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 290  
Rack travel in m: 11.70...12.00  
3rd pressure hPa : 800  
Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min : 230 (250)

K22

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm3/ : 77.0...80.0  
1000 s: (74.5...82.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: 800  
Speed rpm : 585  
Del.quantity cm3/ : 71.0...74.0  
1000 s: (68.5...76.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 39.0...41.0  
1000 s: (37.0...43.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 V  
Edition : 16.02.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 247  
Injection pump  
Pump designation : PES6MW100/720RS1195  
EP type number : 0 413 406 183  
Governor  
Governor design. : RQV300...1150MW107  
Governor no. : 0 420 083 208

Customer spec. information  
Customer : KHD

Engine : BF 6L 913 C

1st version kW : 101.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.70...9.80

Del.quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1200  
travel mm : 9.80...10.20

2nd speed rpm : 800  
travel mm : 6.00...6.20

3rd speed rpm : 500  
travel mm : 3.20...3.80

4th speed rpm : 300  
travel mm : 2.20...2.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)



## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 8.70  
Speed rpm : 1180...1190  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Rack travel in mm : 2.00  
Speed rpm : 420...480

TORQUE CONTROL  
Dimension a mm : 0.75  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 800  
Rack travel in m: 10.40...10.50  
3rd speed rpm : 1030  
Rack travel in m: 10.00...10.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.70...9.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 360  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 450  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1000  
Rack travel in m: 10.40...10.50

START CUT-OUT

K24

Speed 1/min : 230 (250)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 69.0...71.0  
1000 s: (67.0...73.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1180...1190

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...130.0  
1000 s: (107.0...133.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.50...7.70  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Test electrically-released starting  
quantity (EES) with 12 volts

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 84  
Edition : 05.03.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 446 248  
Injection pump  
Pump designation : PES6MW100/720RS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1400MW48-12  
Governor no. : 0 420 083 212

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366C

1st version kW : 100.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400  
Rack travel in mm : 9.90...10.00  
Del. quantity cm<sup>3</sup>/ : 5.9...6.1  
100 s: (5.7...6.3)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.2  
Del. quantity cm<sup>3</sup>/ : 0.9...1.3  
100 s: (0.6...1.5)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
travel mm : 9.20...9.60  
2nd speed rpm : 1450  
travel mm : 8.30...8.50  
3rd speed rpm : 550  
travel mm : 2.80...3.40  
4th speed rpm : 300  
travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1470  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 59.0...61.0  
1000 : (57.0...63.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 8.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1530...1560  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 800  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 1050  
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 52.5...55.5  
1000 s: (50.0...58.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 L 2  
Edition : 01.02.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 456 108  
Injection pump  
Pump designation : PES6MW100/321RS1153  
EP type number : 0 413 406 145  
Governor  
Governor design. : RQV250...1100MW83-1  
Governor no. : 0 420 083 182

Cust. part no. : 3-7022

Customer-spec. information  
Customer : MAN

Engine : D 0826 L/204

1st version kW : 150.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1210

travel mm : 11.10...11.50

2nd speed rpm : 1150

travel mm : 10.20...10.40

3rd speed rpm : 550

travel mm : 3.20...3.80

4th speed rpm : 250

travel mm : 1.10...1.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1000

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Setting point:  
Speed rpm : 1130  
Rack travel in mm : 16.5

Testing:  
1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 310...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 220  
Rack travel mm : 9.10...9.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...8.90  
2nd pressure hPa : 480  
Rack travel in m: 10.70...11.00  
3rd pressure hPa : 1000  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 180 (200)

K28

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 129.0...132.0  
1000 s: (126.5...134.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 131.5...134.5  
1000 s: (129.0...137.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: #MAN 3-7022  
Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C11  
Edition : 16.02.90  
Replaces : 05.01.90  
Test oil : ISO-4113

Combination no. : 0 403 466 110

Injection pump  
Pump designation : PES6MW100/120RS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV500...1250MW2A319  
-6

Governer no. : 0 420 085 102

Cust. part no. : 3915688

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 171.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 13.4...13.6  
100 s: (13.2...13.8)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 500.0  
Rack travel in mm : 6.5...6.7  
Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del. quantity : 134.0...136.0  
1000 : (132.0...138.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 500  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: #CDC 3915688  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C11  
Edition : 16.02.90  
Replaces : 05.01.90  
Test oil : ISO-4113

Combination no. : 0 403 466 110

Injection pump  
Pump designation : PES6MW100/12ORS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV500...1250MW2A319  
-6

Governor no. : 0 420 085 102

Cust. part no. : 3915688

Customer spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 171.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 12.80...12.90  
Del.quantity cm3/ : 13.4...13.6  
100 s: (13.2...13.8)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 500.0  
Rack travel in mm : 6.5...6.7  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 134.0...136.0  
1000 : (132.0...138.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49



Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: #CDC 3915688  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 C12  
Edition : 02.02.90  
Replaces : 06.10.89  
Test oil : ISO-4113

Combination no. : 0 403 466 122

Injection pump  
Pump designation : PES6MW100/120RS1137  
EP type number : 0 413 406 131  
Governor  
Governor design. : RSV400...1250MW2A319  
-15  
Governor no. : 0 420 085 123

Cust. part no. : 3917598

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 204.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 13.90...14.00  
Del.quantity cm3/ : 15.9...16.1  
100 s: (15.7...16.3)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 6.6...6.8  
Del.quantity cm3/ : 1.3...1.7  
100 s: (1.0...1.9)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 159.5...161.5  
1000 : (157.5...163.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.8

Testing:

1st rack travel in: 12.90  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1365...1395  
3rd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.10...6.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 149.5...152.5  
1000 s: (147.0...155.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80

Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: #CDC 3917598  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 Q  
Edition : 16.02.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 466 123

Injection pump  
Pump designation : PES6MW100/12ORS1137-  
2

EP type number : 0 413 406 180

Governor

Governor design. : RSV500...1250MW2A319  
-16

Governor no. : 0 420 085 130

Customer-spec. information

Customer : CUMMINS

Engine : 6 CTA-8.3 L

1st version kW : 171.0

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

L07

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 134.0...136.0

1000 : (132.0...138.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.00...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 126.5...129.5  
1000 s: (124.0...132.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

L08

Remarks:

: #CDC 3918357

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 I 2  
Edition : 05.03.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 466 124

Injection pump  
Pump designation : PES6MW100/120RS1178  
EP type number : 0 413 406 160  
Governor  
Governor design. : RSV425...1250MW2A332  
-2  
Governor no. : 0 420 085 131

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CT

1st version kW : 174.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 1.1...1.5  
100 s: (0.8...1.7)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 900  
Del.quantity : 142.0...144.0  
1000 : (140.0...146.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.80  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
3rd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 525...585

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.80...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : 305  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 465  
Rack travel in m: 12.80...13.10  
3rd pressure hPa : 900  
Rack travel in m: 13.80...13.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 92.5...94.5  
1000 s: (90.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: #CDC 3913758

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1

Starting/full-load transition speed  
from holding magnet = 500 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 H  
Edition : 02.02.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 474 009  
Injection pump  
Pump designation : PES4MW100/720RS1187  
EP type number : 0 413 404 108  
Governor  
Governor design. : RSV300...1250MW5A337  
Governor no. : 0 420 085 128

Customer-spec. information  
Customer : KHD

Engine : BF 4L 913C

1st version kW : 92.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.2  
Del.quantity cm<sup>3</sup>/ : 1.2...1.6  
100 s: (0.9...1.8)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 1000  
Del.quantity : 118.0...120.0  
1000 : (116.0...122.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6



# Testing:

1st rack travel in: 11.90  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

## SET IDLE AUXILIARY SPRING

Speed rpm : 300  
Rack travel in mm : 8.00...8.20

## TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 900  
Rack travel in m: 13.10...13.30  
4th speed rpm : 1000  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.80...10.90

## Measurement

Speed 1/min : 500

1st pressure hPa : 320  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 470  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1000  
Rack travel in m: 13.20...13.30

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800

Del.quantity cm3/ : 113.5...116.5  
1000 s: (111.0...119.0)  
Spread cm3 : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 66.0...68.0  
1000 s: (64.0...70.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1290...1300

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 H 1  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 011  
 Injection pump  
 Pump designation : PES4MW100/720RS1187  
 EP type number : 0 413 404 108  
 Governor  
 Governor design. : RSV300...1250MW5A337  
 -1  
 Governor no. : 0 420 085 137

Customer-spec. information  
 Customer : KHD

Engine : BF 4L 913C

1st version kW : 92.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

### Testing:

1st rack travel in: 11.90  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.6  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

### SET IDLE AUXILIARY SPRING

Speed rpm : 300  
Rack travel in mm : 8.00...8.20

### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 900  
Rack travel in m: 13.10...13.30  
4th speed rpm : 1000  
Rack travel in m: 12.90...13.10

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 320  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 470  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1000  
Rack travel in m: 13.20...13.30

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 113.5...116.5  
1000 s: (111.0...119.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (64.0...70.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1290...1300

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

Test electrically-released starting  
quantity (EES) with 12 volts

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAS 8,3 r  
Edition : 29.01.1990  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 476 003  
  
Injection pump  
Pump designation : PES6MW100/320LS1001  
Governor  
Governor design. : RSV375...1100MW2/304

Customer-spec. information  
Customer : CASE

Engine : A 501 BDTI

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.95...3.05  
: (-)  
Rack travel in mm : 10.5  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
  
Rack travel in mm : 14.1  
  
Del.quantity cm3/ : 15.5...15.7  
100 s: (-)  
  
Spread cm3 : 0.3  
100 s: (-)  
  
2nd speed rpm : 375  
Rack travel in mm : 6.0  
Del.quantity cm3/ : 1.6...2.2  
100 s: (-)  
Spread cm3 : 0.3  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 155.0...157.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...47

Testing:  
1st rack travel in: 13.1  
Speed rpm : 1140...1150  
2nd rack travel in: 4.0  
Speed rpm : 1215...1245  
3rd rack travel in: 0.3...1.7  
Speed rpm : 1300

## LOW IDLE 1

Control lever  
position degrees: 22...25  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.5

Speed rpm : 375  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 14.1  
2nd speed rpm : 700  
Rack travel in m: 14.2...14.6  
3rd speed rpm : 600  
Rack travel in m: 14.3...14.5

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 157.0...163.0  
1000 s: (-)  
Speed rpm : 600  
Del.quantity cm3/ : < 161.0  
1000 s: (-)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.1  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 375  
Del.quantity cm3/ : 16.0...22.0  
1000 s: (-)

Remarks:

: CASE # A-150238

Start-of-delivery mark is at start of  
delivery of cylinder 1

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 6,1 N 1  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 044  
 Injection pump  
 Pump designation : PES6MW100/320RS1132  
 EP type number : 0 413 406 124  
 Governor  
 Governor design. : RSV650...750MW4A311-  
 1  
 Governor no. : 0 420 085 134

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TD 61 AG

1st version kW : 83.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 6.3...6.4

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 33...41

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30

Speed rpm : 750...760

2nd rack travel in: 4.00

Speed rpm : 765...795

4th rack travel in: 950  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control Lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 650  
Rack travel in mm : 5.80...5.90

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 750...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 650  
Rack travel in mm : 6.30...6.40  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 6,1 N 2  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 045  
 Injection pump  
 Pump designation : PES6MW100/320RS1132  
 EP type number : 0 413 406 124  
 Governor  
 Governor design. : RSV650...750MW4A311-  
 2  
 Governor no. : 0 420 085 135

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TID 61 AG

1st version kW : 102.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0  
 Rack travel in mm : 6.2...6.3  
 Del.quantity cm3/ : 1.7...2.1  
 100 s: (1.5...2.2)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 113.0...115.0  
 1000 : (111.0...117.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 34...42

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 750...760  
 2nd rack travel in: 4.00  
 Speed rpm : 780...810



4th rack travel in: 950  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 650  
Rack travel in mm : 5.70...5.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 750...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 650  
Rack travel in mm : 6.20...6.30  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6, D H 1  
Edition : 02.02.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 476 080  
Injection pump  
Pump designation : PES6MW100/720RS1191  
EP type number : 0 413 406 179  
Governor  
Governor design. : RSV350...1300MWOA329  
-6  
Governor no. : 0 420 085 136

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 LA

1st version kw : 170.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00  
Speed rpm : 1330...1340  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 25...33  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.20

Measurement  
Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 500  
Rack travel in m: 12.80...13.10  
3rd pressure hPa : 1000  
Rack travel in m: 14.00...14.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 99.5...102.5  
1000 s: (97.0...105.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1330...1340

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4 F3  
 Edition : 05.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 035  
 Injection pump  
 Pump designation : PE8MW100/720LS1173  
 EP type number : 0 413 508 108  
 Governor  
 Governor design. : RQ300/1000MW104-1  
 Governor no. : 0 420 082 041

Customer-spec. information  
 Customer : KHD

Engine : F8L513

1st version kW : 150.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 10.00...10.10
Del.quantity cm3/		: 9.0...9.2
	100 s:	(8.8...9.4)
Spread	cm3	: 0.3
	100 s:	(0.6)
2nd speed	rpm	: 300.0
Rack travel in mm		: 4.9...5.1
Del.quantity cm3/		: 1.1...1.5
	100 s:	(0.8...1.7)
Spread	cm3	: 0.3
	100 s:	(0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1100
travel mm		: 8.80...9.20
2nd speed	rpm	: 1060
travel mm		: 6.90...7.10
3rd speed	rpm	: 450
travel mm		: 4.20...4.80
4th speed	rpm	: 300
travel mm		: 1.30...1.70

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version		
Speed	rpm	: 1000
Del.quantity		: 90.0...92.0
	1000	: (88.0...94.0)
Spread	cm3	: 3.50
	1000	: (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1040...1055  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL  
Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 700  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 900  
Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm3/ : 102.5...105.5  
1000 s: (100.0...108.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.00

Speed rpm : 1040...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Set warm starting fuel delivery  
110 cm<sup>3</sup> /1000 strokes at n = 100  
min -1 at spool

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4017  
 Edition : 12.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 036  
 Injection pump  
 Pump designation : PE8MW100/720LS1128  
 EP type number : 0 413 508 103  
 Governor  
 Governor design. : RQV425...900MW76-1  
 Governor no. : 0 420 083 210

Customer-spec. information  
 Customer : KHD

Engine : BF 8L 513

1st version kW : 160.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1000  
 travel mm : 9.50...10.10

2nd speed rpm : 950  
 travel mm : 8.70...8.90

3rd speed rpm : 600  
 travel mm : 3.90...4.50

4th speed rpm : 425  
 travel mm : 1.60...2.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.50  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 955...985  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 425  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 430...490

TORQUE CONTROL  
Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 600  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 750  
Rack travel in m: 10.80...11.00

#### START CUT-OUT

Speed 1/min : 350 (370)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 108.5...111.5  
1000 s: (106.0...114.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...150.0  
1000 s: (137.0...153.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h12  
 Edition : 01.02.90  
 Replaces : 14.1.88  
 Test oil : ISO-4113

Combination no. : 9 400 230 069

Injection pump  
 Pump designation : PES6A100D410RS2676-1  
 EP type number : 9 410 230 024  
 Governor  
 Governor design. : RSV450...1000A1C2186  
 -1L  
 Governor no. : 9 420 234 149

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466A

1st version kW : 140.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 121.5...123.5

1000 : (119.5...125.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 10.60

Speed rpm : 1045...1055

2nd rack travel in: 4.00



Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.60...11.60  
2nd speed rpm : 700  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 132.0...135.0  
1000 s: (129.5...137.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1045...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (185.0...215.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed rpm : 1075  
Rack travel in mm : 5.90...6.10

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.80...6.00

Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE28030  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1 with control-rod  
travel = 10.50 mm.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a76  
Edition : 01.02.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 230 089CW

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A0C2190  
-3R

Governor no. : 9 420 234 125

Cust. part no. : 3915294

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 164.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 11.50...11.60  
Del.quantity cm<sup>3</sup>/ : 11.3...11.5  
100 s: (11.1...11.7)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.8...6.0  
Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 113.0...115.0  
1000 : (111.0...117.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 10.50  
Speed rpm : 1140...1150  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 j 1  
Edition : 28.09.89  
Replaces : 15.6.88  
Test oil : ISO-4113

Combination no. : 9 400 230 096DA

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV425...900A4C2213

Cust. part no. : 3908845

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT-I

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 37...45

Testing:

1st rack travel in: 13.00

Speed rpm : 795...805

2nd rack travel in: 4.00

Speed rpm : 825...855  
3rd rack travel in: 4.00  
Speed rpm : 830...860

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 795...805

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a12  
Edition : 01.02.90  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100ADC2190  
-8R  
Governor no. : 9 420 234 137

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3911952

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a13  
Edition : 01.02.90  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050ADC2190  
-10R  
Governor no. : 9 420 234 142

Customer-spec. information  
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 89.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

MD7

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.60...9.70

Del.quantity cm<sup>3</sup>/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control Lever

position degrees: 41...49

Testing:



1st rack travel in: 8.60  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 750  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915964

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

## Note remarks

### Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k  
Edition : 01.02.90  
Replaces : 15.6.88  
Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...105DA0C2216  
R  
Governor no. : 9 420 234 146

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 141.7  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 1.8...2.2  
100 s: (1.5...2.4)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 100.5...102.5  
1000 : (98.5...104.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control Lever  
position degrees: 43...51

Testing:

1st rack travel in: 10.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 25...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 126.0...130.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3911963

Adjust stop lever to 0.5...1.0 mm  
before stop.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 a12  
 Edition : 26.01.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 042  
 Injection pump  
 Pump designation : PES6P110A72ORS361  
 Governor  
 Governor design. : RSV450...1100P2/467

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 AT

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.5  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.9

Del.quantity cm3/ : 13.7...13.9

100 s: (-)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450

Rack travel in mm : 5.5

Del.quantity cm3/ : 0.9...1.5

100 s: (-)

Spread cm3 : 0.6

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 670

Del.quantity : 137.0...139.0

1000 : (134.0...142.0)

## RATED SPEED

### 1st version

Control lever

position degrees: 42...50

### Testing:

1st rack travel in: 9.9

Speed rpm : 1095...1105

2nd rack travel in: 4.0

Speed rpm : 1200...1230

3rd rack travel in: 0.3...1.7

Speed rpm : 1300

## LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.0  
Speed rpm : 450  
Rack travel in mm : 5.5  
Rack travel in mm : 2.0  
Speed rpm : 635...695  
Speed rpm : 850  
Maximum rack trave: 1.0

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 10.85...10.95  
2nd speed rpm : 900  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 850  
Rack travel in m: 10.85...11.15  
4th speed rpm : 650  
Rack travel in m: 11.55...11.65  
5th speed rpm : 550  
Rack travel in m: 8.85...8.95

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 410  
Rack travel mm : 10.85...10.95

##### Measurement

Speed 1/min : 500

1st pressure hPa : 180  
Rack travel in m: 9.40...9.80

#### START CUT-OUT

Speed 1/min : 400...700

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 670  
Speed rpm : 650  
Del.quantity cm3/ : 150.5...153.5  
1000 s: (147.0...157.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm3/ : 86.0...94.0  
1000 s: (85.0...95.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.9  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 15.0...17.0  
1000 s: (-)  
Rack travel in mm : 21.0

#### HIGH IDLE

#### 1st version

Speed rpm : 1150  
Del.quantity cm3/ : 60.0...70.0  
1000 s: (58.5...71.5)

#### LOW IDLE

Speed rpm : 450  
Del.quantity cm3/ : 9.0...15.0  
1000 s: (7.0...17.0)

#### Remarks:

: JOHN DEERE # AR91127  
Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7.6 a 5  
 Edition : 25.01.1990  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 076  
 Injection pump  
 Pump designation : PES6P110A72ORS361  
 Governor  
 Governor design. : RSV600...1100P2/480

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.5  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.0  
 Del.quantity cm<sup>3</sup>/ : 16.2...16.4  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (-)

2nd speed rpm : 600  
 Rack travel in mm : 5.6  
 Del.quantity cm<sup>3</sup>/ : 2.2...2.8  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 162.5...164.5  
 1000 : (159.5...167.5)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
 1st rack travel in: 11.0  
 Speed rpm : 1145...1155  
 2nd rack travel in: 4.0  
 Speed rpm : 1225...1255  
 3rd rack travel in: 0.3...1.7  
 Speed rpm : 1350

## LOW IDLE 1

Control lever  
 position degrees: 21...29  
 Setting point w/out bumper spring  
 Speed rpm : 600  
 Rack travel in mm : 5.1

Testing:  
 Speed rpm : 100



Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 730...760

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.95...12.05  
2nd speed rpm : 950  
Rack travel in m: 11.95...12.25  
3rd speed rpm : 850  
Rack travel in m: 12.25...12.35

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 169.0...173.0  
1000 s: (166.0...176.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.0  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 15.5...17.5  
1000 s: (-)  
Rack travel in mm : 21.0

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 55.0...65.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (-)

Remarks:

: JOHN DEERE # AR96258

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

Magnet.

M16

Acceleration from start to full load  
with n = 400...750 min. -1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g 7  
Edition : 25.01.1990  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 231 176  
Injection pump  
Pump designation : PES6P110A72ORS3083  
Governor  
Governor design. : RSV400...1050P2/488-2

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.5  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.5

Del.quantity cm3/ : 14.65...14.95

100 s: (-)

Spread cm3 : 0.4

100 s: (0.75)

2nd speed rpm : 400

Rack travel in mm : 7.0

Del.quantity cm3/ : 1.35...1.85

100 s: (-)

Spread cm3 : 0.45

100 s: (0.75)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 146.5...146.5

1000 : (144.0...152.0)

## RATED SPEED

### 1st version

Control lever

position degrees: 42...50

### Testing:

1st rack travel in: 11.5

Speed rpm : 1090...1100

2nd rack travel in: 4.0

Speed rpm : 1175...1205

3rd rack travel in: 4.0

Speed rpm : 1185...1215

4th rack travel in: 1300

Speed rpm : 0.3...1.7

## LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 660...720

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.5  
2nd speed rpm : 700  
Rack travel in m: 13.7...13.9

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 413  
Rack travel mm : 13.05...13.15

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 147  
Rack travel in m: 11.1...11.5  
2nd pressure hPa : -  
Rack travel in m: 10.4

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 179.0...183.0  
1000 s: (176.0...186.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 91.0...95.0  
1000 s: (88.0...98.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.5  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (45.5...58.5)

#### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 13.5...18.5  
1000 s: (11.0...21.0)

#### Remarks:

Start-of-delivery mark = 12,75° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 k 2  
 Edition : 15.12.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 400 646 268  
 Injection pump  
 Pump designation : PE6A95D410RS2525  
 EP type number : 0 410 696 987  
 Governor  
 Governor design. : RQ225/1200AB1156L  
 Governor no. : 0 420 200 079

Customer-spec. information  
 Customer : DAF

Engine : DH 825

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 225.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Del.quantity : 73.0...75.0

1000 : (71.0...77.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.40

Speed rpm : 1245...1260

2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 225  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 345...385  
Speed rpm : 490  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 650  
Rack travel in m: 11.70...11.80  
4th speed rpm : 1035  
Rack travel in m: 10.90...11.10  
5th speed rpm : 1100  
Rack travel in m: 10.50...10.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm3/ : 74.5...77.5  
1000 s: (72.0...80.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1245...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 i 1  
 Edition : 22.3.90  
 Replaces : 11.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 400 646 271  
 Injection pump  
 Pump designation : PE6A95D410LS2621  
 EP type number : 0 410 696 982  
 Governor  
 Governor design. : RQV300...1250AB1195L  
 Governor no. : 0 420 212 172

Customer-spec. information  
 Customer : KHD

Engine : F6L413F

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1-6-5-4-3-2

Phasing : 0-75-120-195-240-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 10.40...10.50  
 Del.quantity cm3/ : 9.6...9.8  
 100 s: (9.4...10.0)  
 Spread cm3 : 0.35  
 100 s: (0.6)

2nd speed rpm : 300  
 Rack travel in mm : 10.90...11.00  
 Del.quantity cm3/ : 0.8...1.4  
 100 s: (0.55...1.65)  
 Spread cm3 : 0.35  
 100 s: (0.55)  
 100 s: 7.70..

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.30  
 2nd speed rpm : 500  
 travel mm : 2.60...2.90  
 3rd speed rpm : 1000  
 travel mm : 5.40...5.60  
 4th speed rpm : 1300  
 travel mm : 7.70...7.80  
 5th speed rpm : 1380  
 travel mm : 8.50...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1250  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 96.5...98.5  
 1000 : (94.5...100.5)  
 Spread cm3 : 3.5  
 1000 : (6.0)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.40

Speed rpm : 1290...1300

2nd rack travel in: 4.50

Speed rpm : 1365...1395

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 375...485

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

3rd speed rpm : 850

Rack travel in m: 10.70...10.90

4th speed rpm : 950

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm<sup>3</sup>/ : 95.0...98.0

1000 s: (92.5...100.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1290...1300

M22

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 14.40...14.80

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 i 2  
 Edition : 05.03.90  
 Replaces : 26.8.88  
 Test oil : ISO-4113  
 Combination no. : 0 400 646 275  
 Injection pump  
 Pump designation : PE6A95D410LS2621  
 EP type number : 0 410 696 982  
 Governor  
 Governor design. : RQ300/1250AB1148-1L  
 Governor no. : 0 420 200 104

Customer-spec. information  
 Customer : KHD

Engine : F6L413F

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 16.80...18.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 17.6

Testing:

1st rack travel in: 9.60

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1325...1355



# LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

## Testing:

Speed rpm : 100

Minimum rack trave: 7.90

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 340...380

## TORQUE CONTROL

Dimension a mm : 0.17

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.60...10.70

2nd speed rpm : 600

Rack travel in m: 11.10...11.20

3rd speed rpm : 915

Rack travel in m: 11.10...11.20

4th speed rpm : 980

Rack travel in m: 10.60...10.80

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 650

Del.quantity cm3/ : 95.0...98.0

1000 s: (92.5...100.5)

## RACK STOP ADJUSTMENT

Speed rpm : 650

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1295...1310

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 15.30...15.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAO 14,6 a  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 648 146  
  
Injection pump  
Pump designation : PE8A95D320LS2672  
EP type number : 0 410 698 985  
Governor  
Governor design. : RQ250/1150AB1191-1R  
Governor no. : 0 420 201 646

## Customer-spec. information

Engine : D2848 M

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve  
: 1 417 413 000  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 10.4...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 250.0  
Rack travel in mm : 8.1...8.3  
Del.quantity cm3/ : 0.9...1.5  
100 s: (0.6...1.7)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 13.20...13.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del.quantity : 109.0...111.0  
1000 : (107.0...113.0)  
Spread cm3 : 3.50  
1000 : (4.50)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 13.5

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250

Rack travel in mm : 7.4

Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 600  
Rack travel in m: 12.90...13.10

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...180.0  
1000 s: (167.0...183.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 15,8 L  
Edition : 15.03.90  
Replaces : 7.4.89  
Test oil : ISO-4113

Combination no. : 0 400 649 196

Injection pump  
Pump designation : PE10A95D610/4LS2452  
EP type number : 0 410 699 998  
Governor  
Governor design. : RQV750AB996L  
Governor no. : 0 420 212 091

Customer-spec. information  
Customer : KHD

Engine : F10L413F

1st version kW : 162.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-10- 9- 4- 3- 6-  
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.6...1.6

100 s: (0.3...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 755

travel mm : 5.20...5.40

2nd speed rpm : 785

travel mm : 7.40...7.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 9.60

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 772...787

START CUT-OUT

Speed 1/min : 660 (680)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

Remarks:

:

APPLICATION

Compressor

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 15,8 d2  
 Edition : 12.09.86  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 649 243  
 Injection pump  
 Pump designation : PE10A95D610/4LS2452  
 EP type number : 0 410 699 998  
 Governor  
 Governor design. : RGV300...1250AB1223-1L  
 Governor no. : 0 420 212 194

Customer-spec. information  
 Customer : KHD

Engine : F10L413F

1st version kw : 235.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 200  
 travel mm : 0.70...0.80

2nd speed rpm : 500  
 travel mm : 2.60...2.80

3rd speed rpm : 900  
 travel mm : 5.60...5.80

4th speed rpm : 1300  
 travel mm : 8.60...8.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1360...1390

3rd rack travel in: 0.00...1.00

Speed rpm : 1500

LOW IDLE 1

Control lever

position degrees: 14...18

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 375...485

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

3rd speed rpm : 790

Rack travel in m: 10.70...10.90

4th speed rpm : 885

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm<sup>3</sup>/ : 93.5...96.5

1000 s: (91.0...99.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1290...1300

NO2

## STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13.50...14.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 15,8 d3  
 Edition : 14.04.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 649 245  
 Injection pump  
 Pump designation : PE10A95D610/4LS2452  
 EP type number : 0 410 699 998  
 Governor  
 Governor design. : RQV300...1250AB1055-2L  
 Governor no. : 0 420 212 216

Customer-spec. information  
 Customer : KHD

Engine : F10L413F

1st version kW : 206.0

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1-10- 9- 4- 3- 6-  
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 9.60...9.70  
 Del.quantity cm3/ : 8.5...8.7  
 100 s: (8.3...8.9)  
 Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.40...1.50  
 2nd speed rpm : 410  
 travel mm : 2.50...2.70  
 3rd speed rpm : 460  
 travel mm : 3.00...3.20  
 4th speed rpm : 1305  
 travel mm : 8.60...8.80  
 5th speed rpm : 1375  
 travel mm : 9.60...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1255  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 85.0...87.0  
 1000 : (83.0...89.0)



Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 8.60  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1475  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

#### CONSTANT REGULATION

Speed rpm : 408...458

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 945  
Rack travel in m: 10.30...10.50  
4th speed rpm : 1110  
Rack travel in m: 9.80...10.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 93.5...96.5  
1000 s: (91.0...99.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 13.50...14.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 6,5 a  
Edition : 07.02.89  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 656 148  
  
Injection pump  
Pump designation : PE6A90D321RS2413  
EP type number : 0 410 696 170  
Governor  
Governor design. : RQ250/1300AB863DR  
Governor no. : 0 420 203 098

Customer-spec. information  
Customer : ENASA

Engine : 9130.00

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 7.5...7.6

100 s: (7.3...7.8)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1280

Del.quantity : 75.0...76.0

1000 : (73.0...78.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

## Testing:

1st rack travel in: 9.20

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1360...1390

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 150  
Minimum rack trave: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1280  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 700  
Rack travel in m: 10.50...10.60  
4th speed rpm : 760  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 64.0...66.0  
1000 s: (61.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1325...1340

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 14.80...15.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 6,5 c  
 Edition : 27.10.89  
 Replaces : 21.4.89  
 Test oil : ISO-4113

Combination no. : 0 400 656 161

Injection pump  
 Pump designation : PE6A90D321RS2690  
 EP type number : 0 410 696 182  
 Governor  
 Governor design. : RQV250...1300AB1238R  
 Governor no. : 0 420 213 109

Customer-spec. information  
 Customer : ENASA

Engine : 94T 3AW 31500

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 9.2...9.3

100 s: (9.0...9.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 250.0

Rack travel in mm : 8.1...8.3

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 300

travel mm : 2.30...2.70

3rd speed rpm : 1340

travel mm : 8.60...8.80

4th speed rpm : 1465

travel mm : 9.70...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 92.5...93.5

1000 : (90.5...95.5)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1445...1475  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 250  
Rack travel in mm : 8.10...8.30

CONSTANT REGULATION  
Speed rpm : 285...390

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 500  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 900  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 490  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 400  
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

NO8

1st version  
Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 94.0...98.0  
1000 s: (91.5...100.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 56.0...57.0  
1000 s: (54.0...59.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...170.0  
1000 s: (157.0...173.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 7,2 b 3  
 Edition : 24.11.89  
 Replaces : 24.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 674 047  
 Injection pump  
 Pump designation : PE4A95D42ORS2662-1  
 EP type number : 0 410 694 994  
 Governor  
 Governor design. : RSV350...1100A8C2222  
 -1R  
 Governor no. : 0 420 233 251

Customer-spec. information  
 Customer : HANOMAG

Engine : D944T-50E  
 1st version kw : 105.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 11.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1170...1200

3rd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 910  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.5...133.5  
1000 s: (128.0...136.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...135.0  
1000 s: (122.0...138.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Wheel loader

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 k 6  
 Edition : 02.02.90  
 Replaces : 20.5.88  
 Test oil : ISO-4113

Combination no. : 0 400 676 184

Injection pump  
 Pump designation : PE6A95D410RS2525  
 EP type number : 0 410 696 987  
 Governor  
 Governor design. : RSV250...1200A5C2199  
 -1L  
 Governor no. : 0 420 232 450

Customer-spec. information  
 Customer : DAF

Engine : DHTD 825

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 10.9...11.0

100 s: (10.7...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 109.0...110.0

1000 : (107.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 51...59



### Testing:

1st rack travel in: 11.60  
Speed rpm : 1230...1240  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
3rd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1490  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6  
Speed rpm : 250  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 470...530

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 400  
Rack travel in m: 13.60...13.70  
3rd speed rpm : 300  
Rack travel in m: 13.80...14.30

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 300  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 280  
Rack travel in m: 11.90...12.10

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 85.5...86.5  
1000 s: (83.5...88.5)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1230...1240

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 10,8 l  
 Edition : 14.04.89  
 Replaces : 10.7.88  
 Test oil : ISO-4113  
 Combination no. : 0 400 676 100  
 Injection pump  
 Pump designation : PE6A95D32ORS2557-1R  
 EP type number : 0 410 696 980  
 Governor  
 Governor design. : RSV350...1100A8C2217  
 -1R  
 Governor no. : 0 420 233 220.

Customer-spec. information  
 Customer : HANOMAG

Engine : D964 T/60E

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...58

### Testing:

1st rack travel in: 9.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1170...1200

3rd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1360  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 905  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 87.0...90.0  
1000 s: (84.5...92.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

Cold-start testing of RSV governor  
according to VDT-I-420/114.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 a 2  
Edition : 15.03.90  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 836 016

Injection pump  
Pump designation : PES6A85D410/3RS2415  
EP type number : 0 410 886 915  
Governor  
Governor design. : RQV750AB1004L  
Governor no. : 0 420 212 093

Customer-spec. information  
Customer : KHD

Engine : BF6L913

1st version kW : 42.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 720

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 5.7...5.8

100 s: (5.5...6.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 250.0

Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 720

Del.quantity : 57.5...58.5

1000 : (55.5...60.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 14...22

Testing:

1st rack travel in: 10.20

Speed rpm : 735...740

2nd rack travel in: 4.00

Speed rpm : 778...793

4th rack travel in: 830

Speed rpm : 0.00...1.00

## START CUT-OUT

Speed 1/min : 660 (0)

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 747  
Del.quantity cm3/ : 38.0...40.0  
1000 s: (35.5...42.5)  
Speed rpm : 750  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (32.5...39.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 735...740

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Remarks:

:

#### APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1p26  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 836 030  
 Injection pump  
 Pump designation : PES6A95D410LS2542-1  
 EP type number : 0 410 896 912  
 Governor  
 Governor design. : RQV250...1100AB1177L  
 Governor no. : 0 420 212 162

Customer-spec. information  
 Customer : MAN

Engine : D2566 M/MF

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.9...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.20

2nd speed rpm : 375  
 travel mm : 2.10...2.40

3rd speed rpm : 500  
 travel mm : 3.50...3.80

4th speed rpm : 1200  
 travel mm : 9.60...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 11.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 345...415

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 500  
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 107.5...113.5  
1000 s: (105.0...116.0)  
Speed rpm : 750  
Del.quantity cm3/ : 113.0...116.0  
1000 s: (110.5...118.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 122.0...132.0  
1000 s: (119.0...135.0)  
Rack travel in mm : 15.50...15.90

Remarks:

:

Set idle stop at 250 min -1 to a  
control-rod travel of 6.8 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 t 2  
 Edition : 14.04.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 836 038  
 Injection pump  
 Pump designation : PES6A85D410/3RS2761  
 EP type number : 0 410 886 895  
 Governor  
 Governor design. : RQ300/1250AB1244L  
 Governor no. : 0 420 200 112

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kw : 118.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.5

Del.quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 14.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 1150

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.30

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1355...1385

LOW IDLE 1



Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 480...520

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 850  
Rack travel in m: 13.60...13.70  
4th speed rpm : 1005  
Rack travel in m: 12.60...12.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 700  
Rack travel in m: 12.70...12.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 88.5...90.5  
1000 s: (86.0...93.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 62.5...63.5  
1000 s: (60.5...65.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.30

Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...120.0  
1000 s: (107.0...123.0)  
Rack travel in mm : 17.00...17.40

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 9  
Edition : 02.05.90  
Replaces : 28.9.89  
Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1100AB1227-  
1R

Governer no. : 0 420 213 113

Customer-spec. information

Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 157.0

Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.10...7.30

2nd speed rpm : 1150

travel mm : 7.50...7.90

3rd speed rpm : 1290

travel mm : 8.90...9.50

4th speed rpm : 350

travel mm : 1.10...1.50

5th speed rpm : 600

travel mm : 2.80...3.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 11.60

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1255...1285

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Speed rpm : 350

Rack travel in mm : 5.40...5.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 405

Rack travel in m: 10.90...11.00

3rd pressure hPa : 535

Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 79.0...83.0

1000 s: (77.0...85.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 165.0...185.0

1000 s: (160.0...190.0)

Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 18.0...22.0

1000 s: (15.5...24.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3914299

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark is at 7° after  
start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b10  
 Edition : 01.02.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 836 043  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1200AB1245R  
 Governor no. : 0 420 213 118

Customer-spec. information  
 Customer : C.D.C

Engine : 6CT830

1st version kW : 157.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 9 681 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm3/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm3 : 0.6  
 100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.00...0.20  
 2nd speed rpm : 350  
 travel mm : 1.00...1.50  
 3rd speed rpm : 450  
 travel mm : 1.90...2.40  
 4th speed rpm : 1200  
 travel mm : 6.90...6.90  
 5th speed rpm : 1350  
 travel mm : 8.15...8.65

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 113.0...115.0  
 1000 : (111.0...117.0)  
 Spread cm3 : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1315...1345  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90

#### START CUT-OUT

Speed 1/min : 290 (300)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3917098

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,8 q 1  
 Edition : 10.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 844 051  
 Injection pump  
 Pump designation : PES4A90D410RS2294  
 EP type number : 0 410 894 011  
 Governor  
 Governor design. : RQV300...1425AB781L  
 Governor no. : 0 420 212 046

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM314

1st version kW : 64.0  
 Rated speed : 2850

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 8.70  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1540...1570

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION  
Speed rpm : 350...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1460...1470

#### INTERMEDIATE RATED SPEED

Control lever  
position degrees: 113...121  
Rack travel in mm : 8.70  
Speed rpm : 1295...1305  
Rack travel in mm : 4.00  
Speed rpm : 1395...1425

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 71.0...81.0  
1000 s: (68.0...84.0)  
Rack travel in mm : 13.70...14.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 k 6  
Edition : 03.11.89  
Replaces : 11.11.88  
Test oil : ISO-4113

Combination no. : 0 400 846 432

Injection pump  
Pump designation : PES6A95D410RS2416  
EP type number : 0 410 896 961  
Governor  
Governor design. : RQ750AB1240L  
Governor no. : 0 420 200 110

Customer-spec. information  
Customer : KHD

Engine : F6L413FR

1st version kW : 89.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X-600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 780...785

## TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.40...10.60

## START CUT-OUT

Speed 1/min : 640 (660)



BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set